PIONEER®
The Art of Entertainment

Service Manual

ORDER NO.
CRT1932

HIGH POWER CASSETTE PLAYER WITH FM/MW/LW TUNER

KEH-1500 X1M/EW
KEH-1500 X1N/EW, X1IN/EW

● **This additional service manual is designed to be used together with Model KEH-1300/X1M/EW Service Manual CRT1798. Refer to it for finding parts numbers and adjustment,etc. which are not shown in this manual.**

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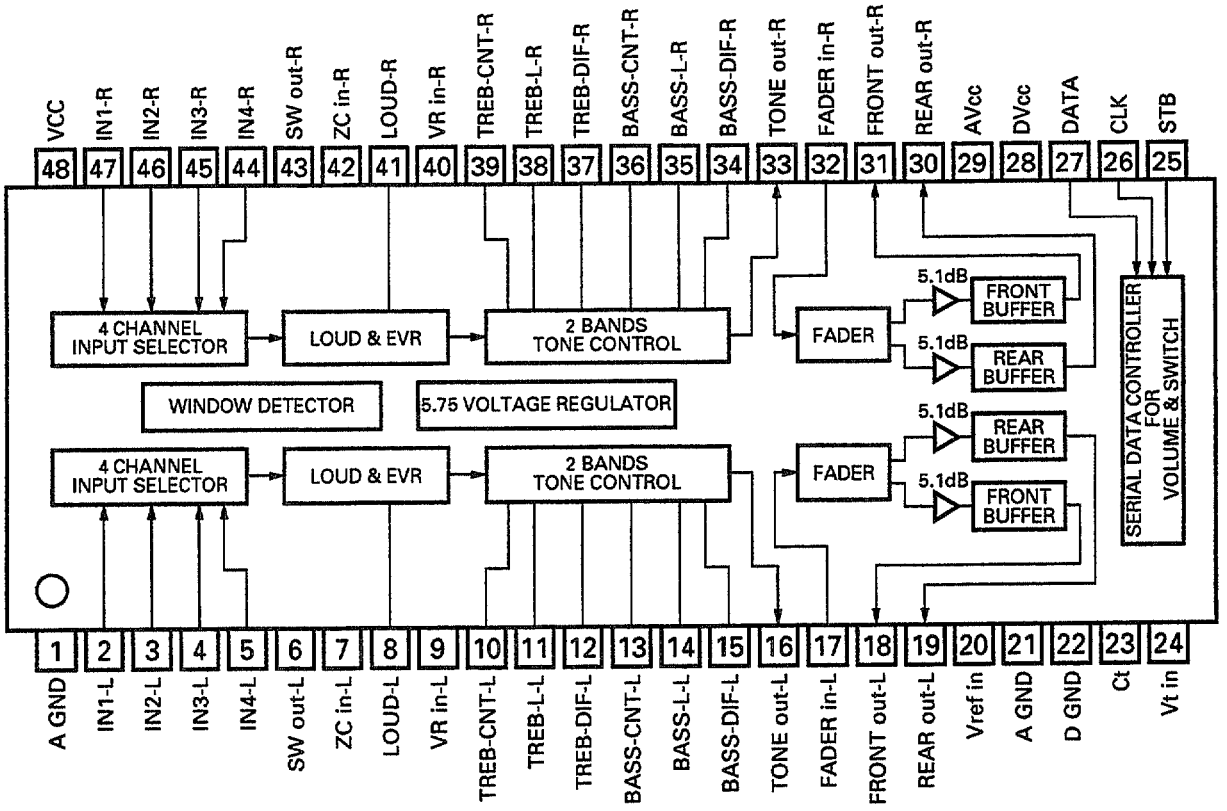
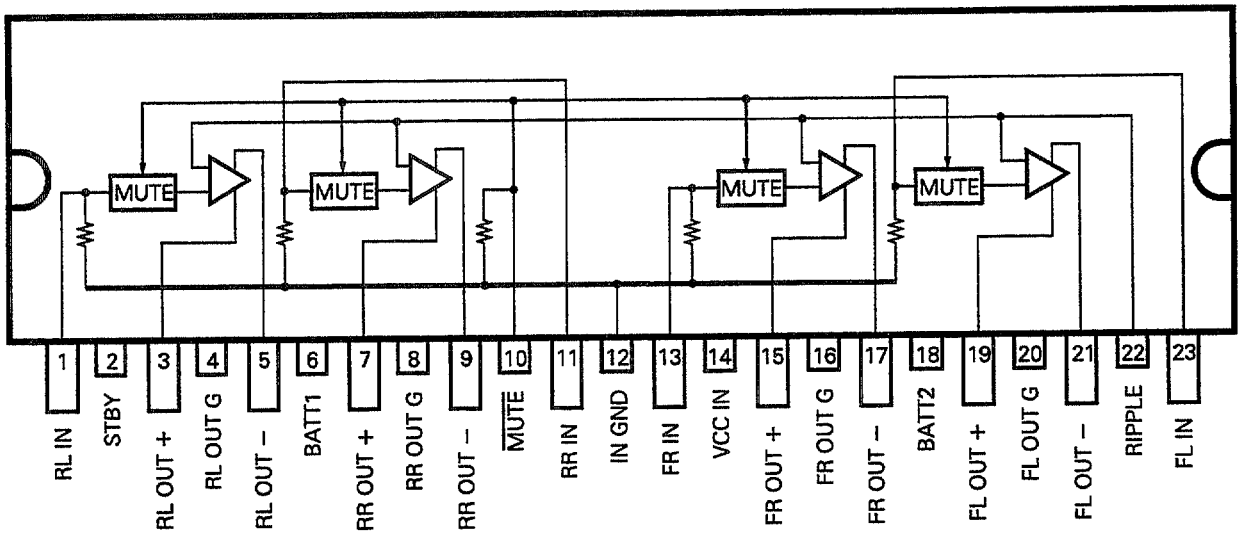
IC INFORMATION

SN761027DL



HA13151



ELECTRICAL PARTS LIST

● Tuner Amp Unit(Page 14)

Circuit Symbol & No	KEH-1300/X1M/EW Part No.	KEH-1500/X1M/EW KEH-1500/X1N/EW KEH-1500/X1IN/EW Part No.
IC 301	HA12134AF	•••••
IC 401	AN6263N	•••••
IC 451	SN761025DL	SN761027DL
IC 551	HA13150A	HA13151
Q 301 302	DTC114TS	•••••
Q 401	DTC114ES	•••••
Q 851 852	DTC143TS	•••••
Q 853	DTA124ES	•••••
VR 301 302	CCP1209	•••••
R 301 302	RD1/4PU272J	•••••
R 303 304	RD1/4PU332J	•••••
R 305 306 309	RD1/4PU104J	•••••
R 307	RD1/4PU223J	•••••
R 308	RD1/4PU183J	•••••
R 401 402	RD1/4PU822J	•••••
R 403	RD1/4PU100J	•••••
R 404	RD1/4PU684J	•••••
R 457 458	RD1/4PU103J	•••••
R 459 460 461	RD1/4PU472J	RD1/4PU0R0J
R 465 466	RD1/4PU223J	RD1/4PU333J
R 602	•••••	RD1/4PU472J
R 851 852	RS1/10S223J	•••••
R 853 854	RD1/4PU821J	•••••
C 301 302 304	CEJA1R0M50	•••••
C 305 306	CKSQYF224Z25	•••••
C 307 308	CKSQYB104K16	•••••
C 309	CEAL4R7M16	•••••
C 310	CEJA4R7M35	•••••
C 311 312	CKSQYB223K25	•••••
C 401	CKSQYB562K50	•••••
C 402	CCSQCH330J50	•••••
C 403	CEAL101M10	•••••
C 404	CKSYB823K50	•••••
C 483	CEJA100M16	CEJA220M6R3
C 851	CEJA100M16	•••••
C 852	CEL100M16	•••••

● Key Board Unit(Page 15)

Circuit Symbol & No	KEH-1300/X1M/EW Part No.	KEH-1500/X1M/EW KEH-1500/X1N/EW KEH-1500/X1IN/EW Part No.
IL 901 902 903	CEL1482	CEL1483

EXPLODED VIEW AND PARTS LIST

● **CHASSIS**

● **Parts List(Page 32)**

*: Non Spare Parts

Mark	No.	Description	KEH-1300/X1M/EW Part No.	KEH-1500/X1M/EW KEH-1500/X1N/EW KEH-1500/X1IN/EW Part No.
	3	Cord Assy	CDE4950	CDE5285
	7	Tuner Amp Assy	CWM4577	CWM5139
	8	Detach Grille Assy	CXA8538	CXA9869
	9	Cassette Mechanism Assy	EXK3436	EXK3416
	25	Panel Unit	CXA8837	CXB1061
	26	Door	CAT1762	CAT1837
*	28	Panel	CNS3768	CNS3837
	40	Grille	CNS3830	CNS4371
	41	Key Board Unit	CWM4579	CWM5143
	48	Screw	BPZ26P060FMC	•••••
	51	Pin Jack(CN851)	CKB1028	•••••
	53	Panel	CNB2014	CNB2027
	56	Holder	CNC6531	•••••

● **CASSETTE MECHANISM ASSY**

● **Parts List(Page 35)**

Mark	No.	Description	EXK3436 Part No.	EXK3416 Part No.
	75	Diode(D1)	1SR-35-100A	•••••
	76	Solenoid(SO1)	EXP1012	•••••
	77	Arm	ENV1491	•••••
	78	Spring	EBH1582	•••••

PACKING METHOD

● **Parts List(Page 36)**

Mark	No.	Description	KEH-1300/X1M/EW Part No.	KEH-1500/X1M/EW Part No.	KEH-1500/X1N/EW Part No.	KEH-1500/X1IN/EW Part No.
	1	Carton	CHG2895	CHG3157	CHG3159	CHL3158
	2-1	Owner's Manual	CRD1965	CRD2182	CRD2182	CRD2182
	2-2	Owner's Manual	CRD1966			
	7	Cord Assy	CDE4950	CDE5285	CDE5285	CDE5285
	9	Contain Box	CHL2895	CHL3157	CHL3159	CHL3158

● **Owner's Manual**

Part No.	Language
CRD2182	English, French, Spanish, German, Italian, Dutch

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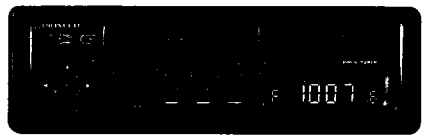
Service Manual

KEH-1400/X1M/UC



ORDER NO.
CRT1798

HIGH POWER CASSETTE PLAYER WITH FM/AM TUNER

KEH-1400 X1M/UC
KEH-1450 X1M/ES
KEH-1311 X1M/UC
KEH-1100 X1M/UC
KEH-1150 X1M/ES

HIGH POWER CASSETTE PLAYER WITH FM/MW/LW TUNER

KEH-1300 X1M/EW
KEH-1300SDK X1M/GR
KEH-1400 X1M/IT

NOTE:

- **See the separate manual CX-644(CRT1800) for the cassette mechanism description.**
- **The cassette mechanism assy employed in this model is one of X-2M series.**
- **Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. "Dolby" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.**
- **For the service mentioned in this manual, the special tools GGD1056 and GGD1100 have to be used. See the sections "Adjustment" on how to use these tools.**

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K-FFM. JAN. 1996 Printed in Japan

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1. SAFETY INFORMATION

● **KEH-1400/X1M/UC,1311/X1M/UC,1100/X1M/UC**

CAUTION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer.
Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty.
If you are not qualified to perform the repair of this product properly and safely; you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5).
When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

FM tuner (KEH-1450, 1150)

Frequency range	87.5 — 108 MHz
Usable sensitivity	11 dBf (1.0 µV/75 Ω, mono, S/N: 30 dB)
50 dB quieting sensitivity	16 dBf (1.7 µV/75 Ω, mono)
Signal-to-noise ratio	70 dB (IEC-A network)
Distortion	0.3 % (at 65 dBf, 1 kHz, stereo)
Frequency response	30 — 15,000 Hz (±3 dB)
Stereo separation	40 dB (at 65 dBf, 1 kHz)

FM tuner (KEH-1300, 1300SDK, 1400/IT)

Frequency range	87.5 — 108 MHz
Usable sensitivity	11 dBf (1.0 µV/75 Ω, mono, S/N: 30 dB)
50 dB quieting sensitivity	16 dBf (1.7 µV/75 Ω, mono)
Signal-to-noise ratio	70 dB (IEC-A network)
Distortion	0.3 % (at 65 dBf, 1 kHz, stereo)
Frequency response	30 — 15,000 Hz (±3 dB)
Stereo separation	40 dB (at 65 dBf, 1 kHz)

MW tuner (KEH-1300, 1300SDK, 1400/IT)

Frequency range	531 — 1,602 kHz
Usable sensitivity	18 µV (25 dB) (S/N: 20 dB)
Selectivity	50 dB (±9 kHz)

LW tuner (KEH-1300, 1300SDK, 1400/IT)

Frequency range	153 — 281 kHz
Usable sensitivity	30 µV (30 dB) (S/N: 20 dB)
Selectivity	50 dB (±9 kHz)

AM tuner (KEH-1450, 1150)

Frequency range	531 — 1,602 kHz (9 kHz)
	530 — 1,710 kHz (10 kHz)
Usable sensitivity	18 µV (25 dB) (S/N: 20 dB)
Selectivity	50 dB (±9 kHz)
	50 dB (±10 kHz)

AM tuner (KEH-1400/UC, 1311, 1100)

Frequency range	530 — 1,710 kHz
Usable sensitivity	18 µV (25 dB) (S/N: 20 dB)
Selectivity	50 dB (±10 kHz)

Note:
Specifications and design are subject to possible modification without notice due to improvements.

General

Power source	14.4 V DC (10.8 — 15.1 V allowable)
Grounding system	Negative type
Max. current consumption	
KEH-1400, 1450, 1311, 1300, 1300SDK	7.5 A
KEH-1100, 1150	6.0 A
Dimensions (DIN) (mounting size)	178 (W) × 50 (H) × 150 (D) mm
	[7 (W) × 2 (H) × 5-7/8 (D) in.]
(nose)	188 (W) × 58 (H) × 19 (D) mm
	[7-3/8 (W) × 2-1/4 (H) × 3/4 (D) in.]
(D) (mounting size)	178 (W) × 50 (H) × 155 (D) mm
	[7 (W) × 2 (H) × 6-1/8 (D) in.]
(nose)	170 (W) × 48 (H) × 14 (D) mm
	[6-3/4 (W) × 1-7/8 (H) × 1/2 (D) in.]
Weight	1.1 kg (2.4 lbs.)

Amplifier

Continuous power output is 14 W (10 W for KEH-1100) per channel min. into 4 ohms, both channels driven 50 to 15,000 Hz with no more than 5 % THD.

Maximum power output	
KEH-1400, 1450, 1311, 1300, 1300SDK	30 W × 4
KEH-1100, 1150	22 W × 4
Load impedance	4 Ω (4 — 8 Ω allowable)
Preout output level/output impedance	500 mV/1 kΩ
Tone controls (bass) KEH-1400, 1311, 1100, 1300, 1300SDK	±12 dB (100 Hz)
(bass) KEH-1450, 1150	+8 dB — −16 dB (100 Hz)
(treble)	±12 dB (10 kHz)
Loudness contour	+10 dB (100 Hz), +7 dB (10 kHz) (Volume: −30 dB)

Tape player

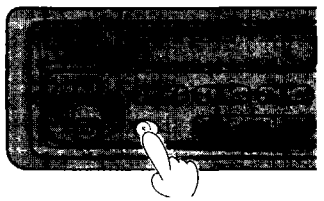
Tape	Compact cassette tape (C-30 — C-90)
Tape speed	4.76 cm/sec. (+0.14 cm/sec., -0.05 cm/sec.)(1-7/8 ips.)
Fast forward/rewind time	Approx. 90 sec. for C-60
Wow & flutter	0.13 % (WRMS)
Frequency response	
KEH-1400, 1450, 1300, 1300SDK	40 — 17,000 Hz (±3 dB)
KEH-1311, 1100, 1150	40 — 14,000 Hz (±3 dB)
Stereo separation	45 dB
Signal-to-noise ratio	
KEH-1400, 1450, 1300, 1300SDK	Metal: Dolby B NR IN: 63 dB (IHF-A network)
	Dolby NR OUT: 55 dB (IHF-A network)
KEH-1311, 1100, 1150	52 dB (IHF-A network)

FM tuner (KEH-1400/UC, 1311, 1100)

Frequency range	87.9 — 107.9 MHz
Usable sensitivity	11 dBf (1.0 µV/75 Ω, mono, S/N: 30 dB)
50 dB quieting sensitivity	16 dBf (1.7 µV/75 Ω, mono)
Signal-to-noise ratio	70 dB (IHF-A network)
Distortion	0.3 % (at 65 dBf, 1 kHz, stereo)
Frequency response	30 — 15,000 Hz (±3 dB)
Stereo separation	40 dB (at 65 dBf, 1 kHz)
Selectivity	70 dB (2ACA)
Three-signal intermodulation (desire signal level)	50 dBf (two undesire signal level: 110 dBf)

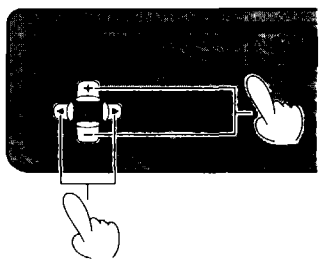
Adjusting Volume and Tone

Mode Selection



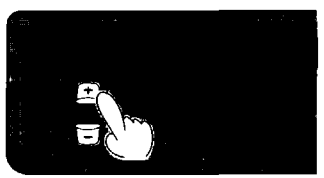
Each press of the [S] button changes the mode as follows:
Fader adjustment (F:) → Tone adjustment (T:) → Volume adjustment (V:)
- Fader, Balance, Treble and Bass settings stop temporarily at the center position.
- If no operations are performed within 8 seconds, adjustment modes are cancelled. Make adjustments within 8 seconds.

Fader/Balance



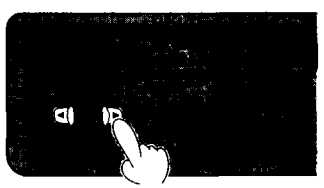
Press the [◄] or [►] button when in the Fader mode, and the Balance mode "B:" is indicated in the display. Press the [+] or [–] button when in the Balance mode, and the display changes to "F:", indicating that you have switched to the Fader mode.

Fader



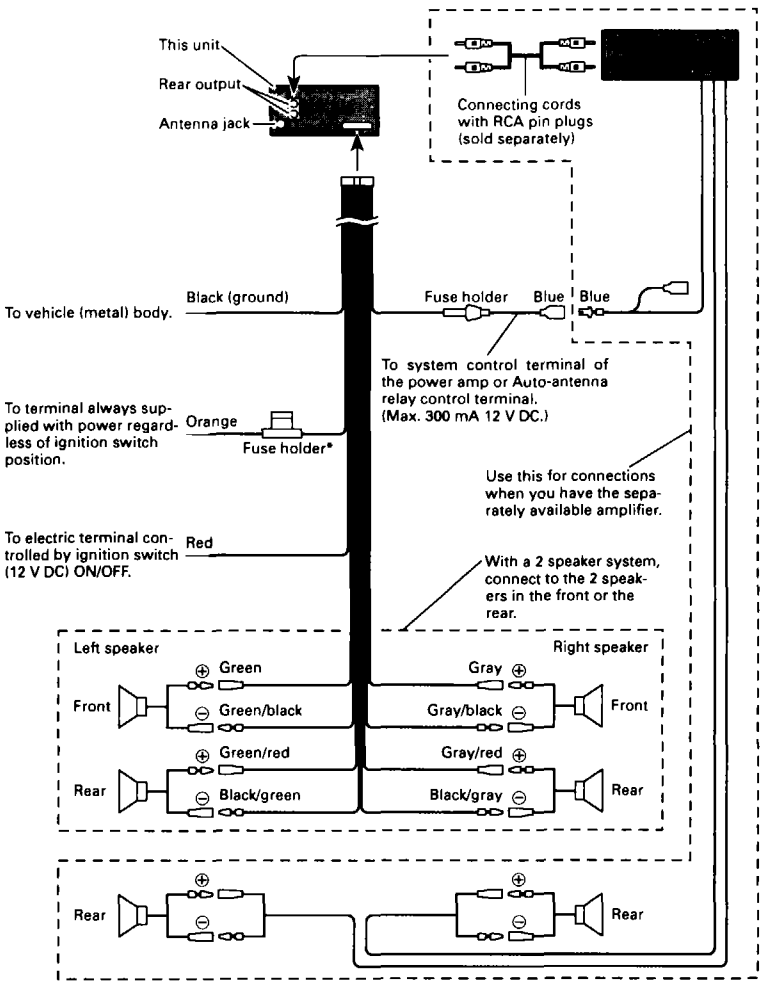
[+]: Shifts the sound toward the front speakers.
[–]: Shifts the sound toward the rear speakers.
(Display shows "F:F9" ~ "F:R9".)
- Please set to "F: 0" when using a 2 speaker system.

Balance



[►]: Shifts the sound toward the right speakers.
[◄]: Shifts the sound toward the left speakers.
(Display shows "B:L9" ~ "B:R9".)

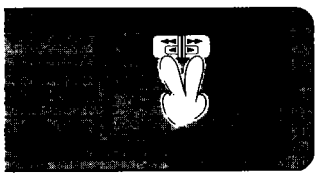
Connection Diagram



* The orange lead fuse holder for the KEH-1100 has a different shape.

Using the Tape Deck

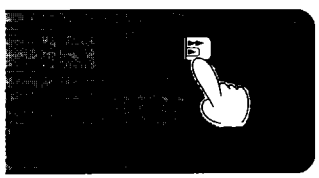
To Change Sides



Press the [◄◄] and [►►] buttons at the same time.

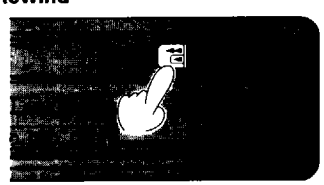
Fast Forward/Rewind

Fast forward



Press the button for the same direction as the tape play indicator.

Rewind



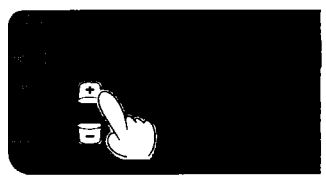
Press the button for the opposite direction as the tape play indicator.

- To release fast forward/rewind, lightly press the [◄◄] or [►►] button located on the opposite side of the one you pressed to fast forward or rewind.
- " ◄ ▬ ▬ ▬► " flashes when the tape is fast forwarding or rewinding.

Bass/Treble

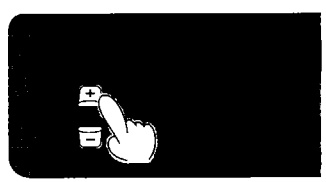
Press the [◄] button when in the Treble mode, and the Bass mode "B:" is indicated in the display. Press the [►] button when in the Bass mode, and the display changes to "T:" indicating that you have switched to the Treble mode.

Adjusting Bass/Treble



[+]: Boosts
[–]: Attenuates
(When in the Treble mode, the display shows "T:–6" ~ "T: 6". When in the Bass mode, it shows "B:–6" ~ "B: 6".)

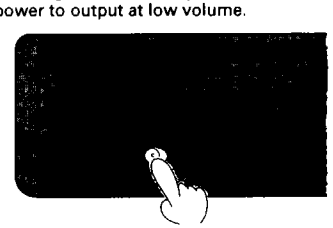
Volume



Pressing the [+] button increases the volume, while the [–] button decreases it.
(Display shows "V: 0" ~ "V: 31".)
- When driving your vehicle, be sure to keep the volume of the unit set low enough to allow you to hear sounds coming from outside.

Loudness

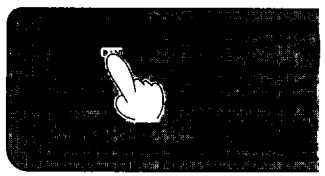
This function enhances both the high and low ranges of sound to give even more power to output at low volume.



Press the [S] button for 2 seconds to turn Loudness ON/OFF.
"LOUD" appears in the display when the Loudness function is turned ON.
"LOUD" goes out when the Loudness function is turned OFF.

Using the Radio

Selecting a Band



Press the [BAND] button to select a band.

F1 → F2 → F3 → AM
(FM1) (FM2) (FM3) (AM)

Seek Tuning

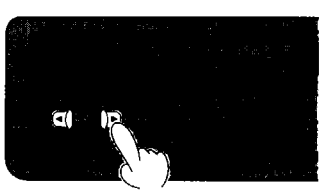
[◄]: Automatically selects a lower frequency station.
[►]: Automatically selects a higher frequency station.
("SEEK" lights in the display.)

Manual Tuning

1.

Press both [◄] and [►] buttons at same time.
("SEEK" goes out from the display.)
- Each time you repeat this operation, "SEEK" either lights or goes out.

2.



[◄]: Use to select lower frequencies.
[►]: Use to select higher frequencies.
Continue pressing the button to move up or down continuously through frequencies.
- Tuning moves up or down in 0.2 MHz steps for FM, 10 kHz steps for AM.

4. DISASSEMBLY

● Removing the Case (not shown)

1.Insert and turn a flat screwdriver at locations indicated by arrows to remove the case.

● Removing the Cassette Mechanism Unit (not shown)

1.Remove the four screws.
2.Disconnect the connector.
3.Remove the cassette mechanism unit.

● Removing the Detach Grille Assy (Fig. 1)

1.Disconnect the three stoppers indicated by arrows.
2.Remove the detach grille assy.

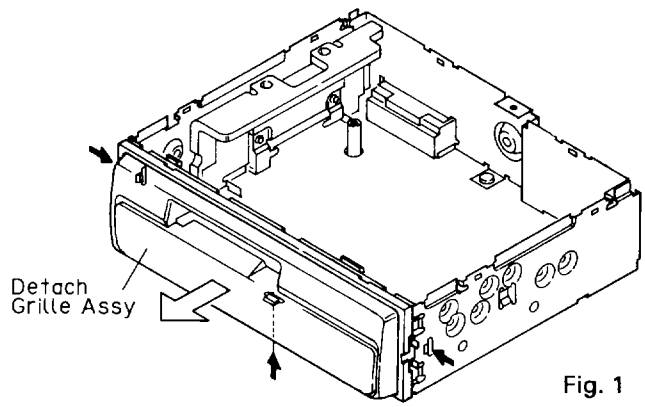


Fig. 1

● Removing the Chassis Unit (Fig. 2)

1.Remove the two screws A, two screws B and one screw C.
2.Unbend the tabs at three locations indicated by arrows.
3.Remove the chassis unit.

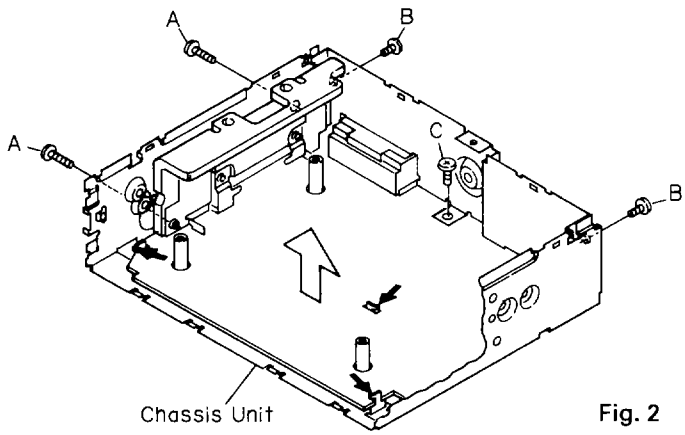


Fig. 2

5. ADJUSTMENT

● **Connection Diagram**

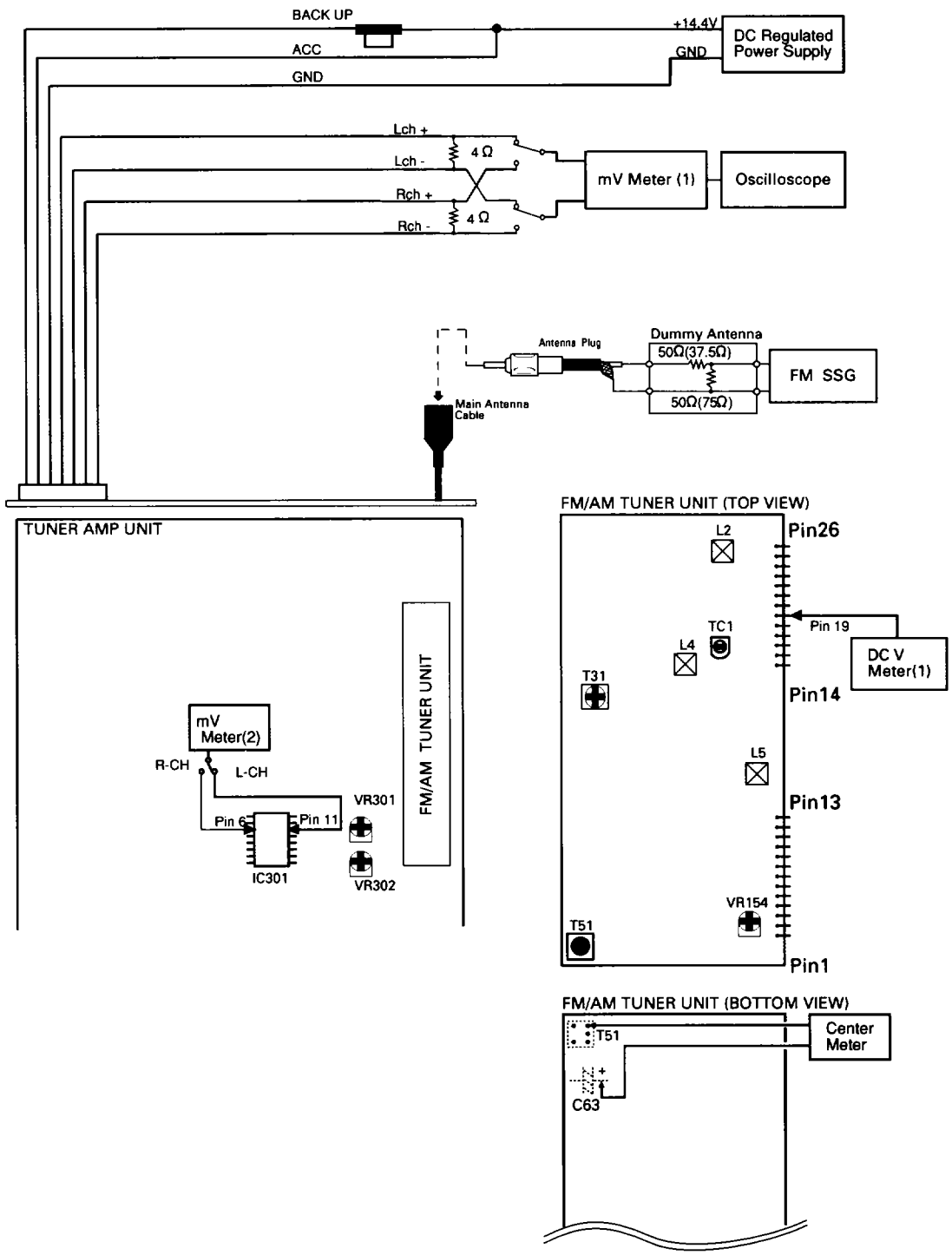


Fig. 3

● **For Repair of the Key Board Unit, Use the Extension-Cord Tool GGD1056.**

● **For Repair of the Cassette Mechanism Unit, Use the Extension-Cord Tool GGD1100.**

FM ADJUSTMENT

Modulation M:MONO MOD., 400Hz 30%(22.5kHz Dev.)
S:STEREO MOD., 1kHz, L or R=30%(20.25kHz+7.5kHz Dev.)

NOTE:Before proceeding to further adjustments after switching power ON, let the tuner run for ten minutes to allow the circuits to stabilize.

(KEH-1400/X1M/UC, 1311/X1M/UC, 1100/X1M/UC)

		FM SSG		Displayed	Adjustment	Adjustment Method
	No.	Frequency(MHz)	Level(dBf)	Frequency(MHz)	Point	(Switch Position)
TUN Volt	1	•••••	•••••	107.9	L5	DC V Meter(1) : 6V
IF	1	98.1 M	60	98.1	T51	Center Meter : 0
ANT Coil	1	98.1 M	5	98.1	L2	mV Meter(1) : Maximum
RF Coil	1	98.1 M	5	98.1	L4	mV Meter(1) : Maximum
IFT	1	98.1 M	5	98.1	T31	mV Meter(1) : Maximum (STEREO MODE)
ARC	1	98.1 S	39	98.1	VR154	mV Meter(1) : Separation 5dB (STEREO MODE)

(KEH-1300/X1M/EW, 1300SDK/X1M/GR, 1400/X1M/IT)

		FM SSG		Displayed	Adjustment	Adjustment Method
	No.	Frequency(MHz)	Level(dBf)	Frequency(MHz)	Point	(Switch Position)
TUN Volt	1	•••••	•••••	108.0	L5	DC V Meter(1) : 6V
IF	1	98.1 M	60	98.1	T51	Center Meter : 0
ANT Coil	1	98.1 M	5	98.1	L2	mV Meter(1) : Maximum
RF Coil	1	98.1 M	5	98.1	L4	mV Meter(1) : Maximum
Image	1	129.3 M	60—80	107.9	TC1	mV Meter(1) : Minimum
IFT	1	98.1 M	5	98.1	T31	mV Meter(1) : Maximum (STEREO MODE)
ARC	1	98.1 S	39	98.1	VR154	mV Meter(1) : Separation 5dB (STEREO MODE)

(KEH-1450/X1M/ES, 1150/X1M/ES)

		FM SSG		Displayed	Adjustment	Adjustment Method
	No.	Frequency(MHz)	Level(dBf)	Frequency(MHz)	Point	(Switch Position)
TUN Volt	1	•••••	•••••	108.0	L5	DC V Meter(1) : 6V
IF	1	98.1 M	60	98.1	T51	Center Meter : 0
ANT Coil	1	98.1 M	5	98.1	L2	mV Meter(1) : Maximum
RF Coil	1	98.1 M	5	98.1	L4	mV Meter(1) : Maximum
IFT	1	98.1 M	5	98.1	T31	mV Meter(1) : Maximum (STEREO MODE)
ARC	1	98.1 S	39	98.1	VR154	mV Meter(1) : Separation 5dB (STEREO MODE)

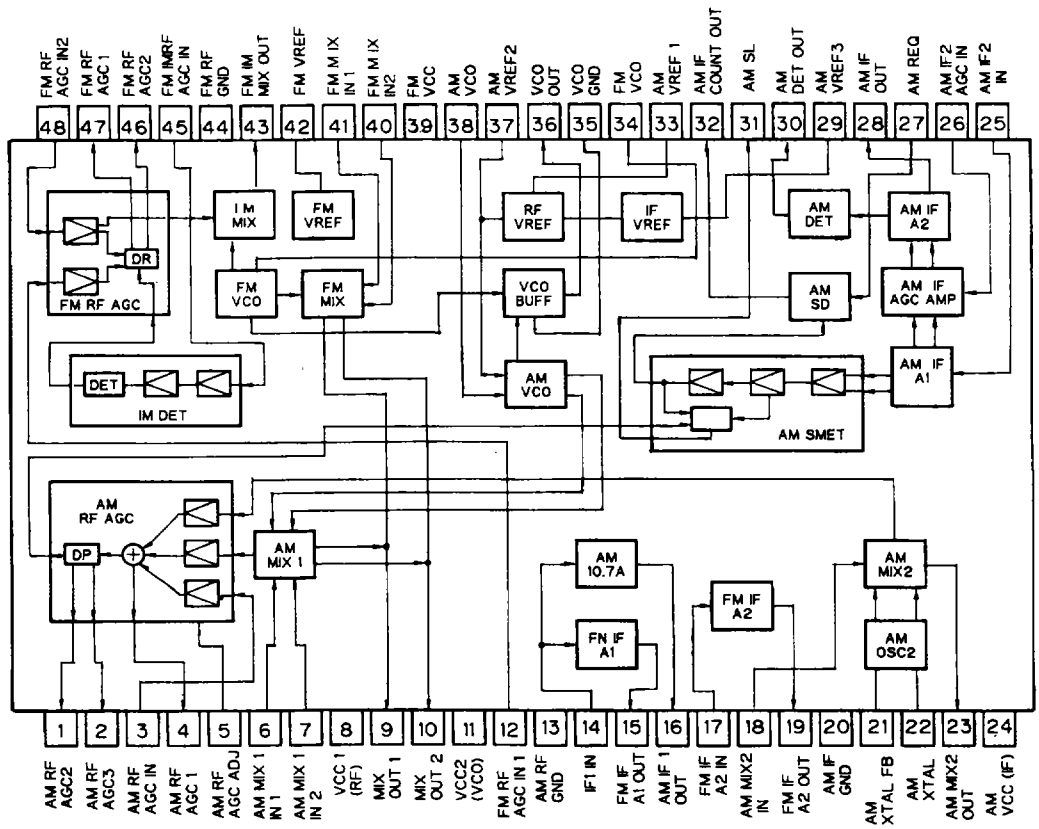
DOLBY NR ADJUSTMENT

(KEH-1400/X1M/UC, 1450/X1M/ES, 1300/X1M/EW, 1400/X1M/IT ,1300SDK/X1M/GR)

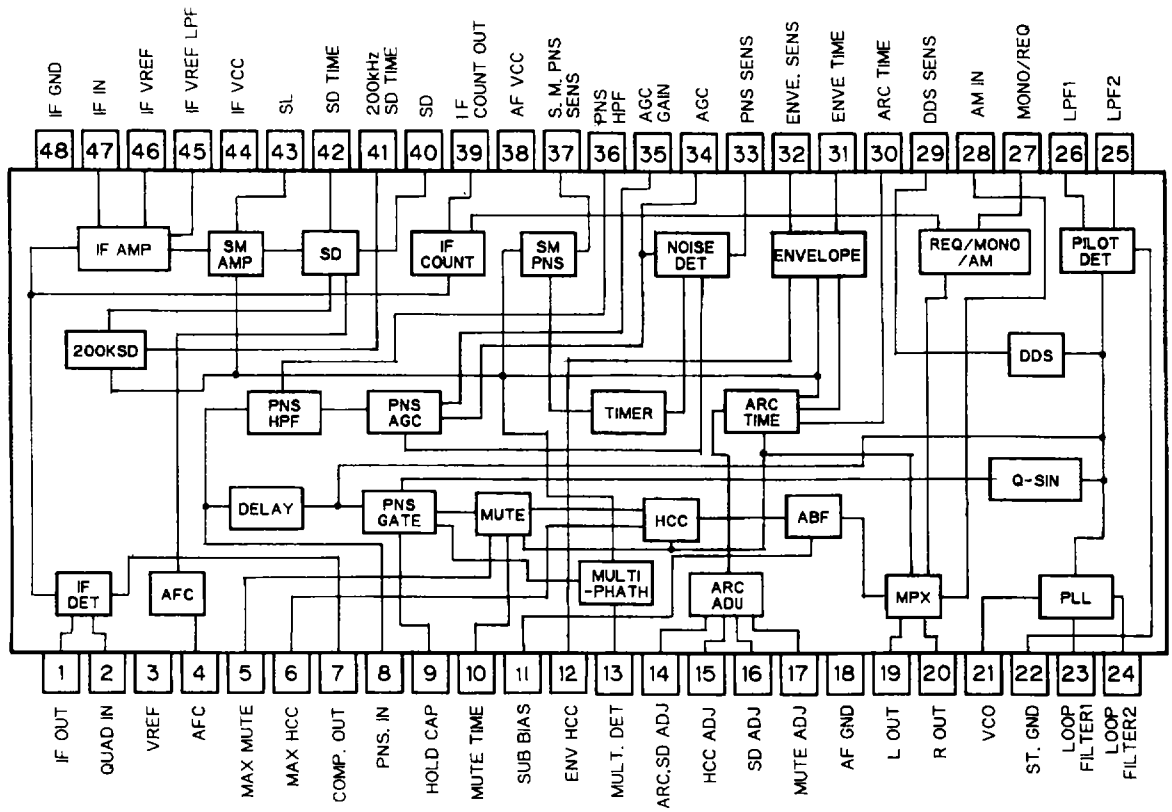
Test Tape	Adjustment Point	Adjustment Method (Switch Position)
NCT-150 (400Hz,200nwb/m)	VR301(Lch),VR302(Rch)	mV Meter(2) : -8.2dBs ± 1dB (DOLBY NR Switch : OFF)

6. IC INFORMATION

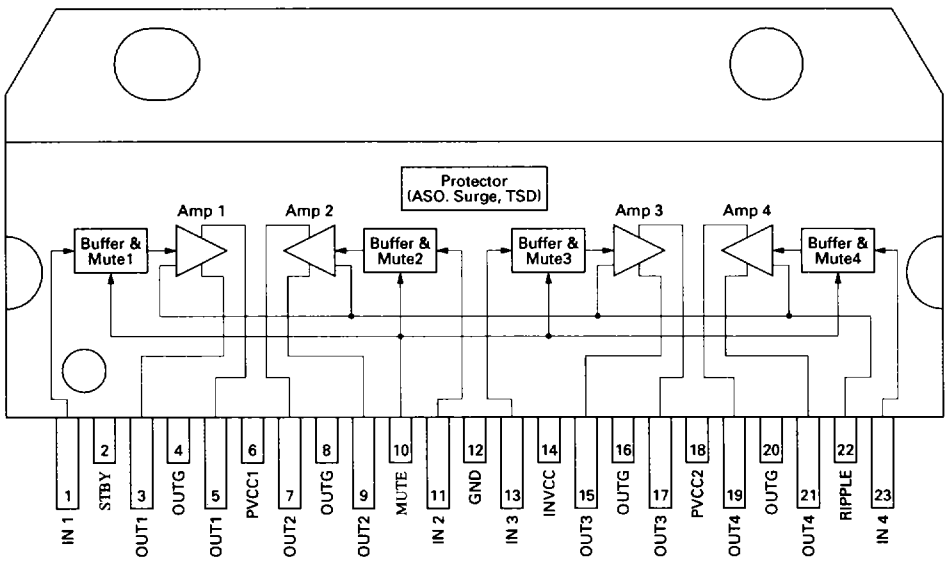
PA4023A



PA4024A



HA13150A

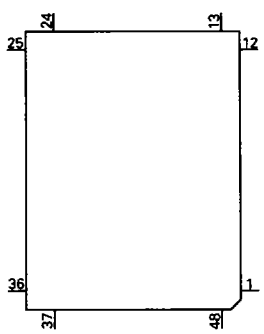


● Pin Functions (PDC015C)

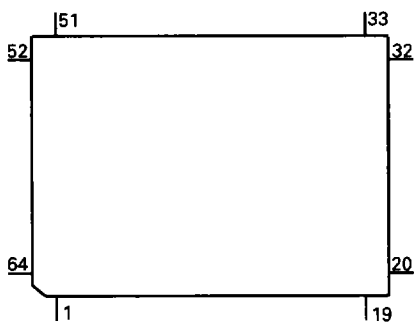
Pin No.	Pin Name	I/O	Function and Operation
1–4	NC		Not used
5–8	KST4–KST1	O	Key strobe 4–1
9–12	KD4–KD1	I	Matrix key return 4–1
13	NC		Not used
14	SCK	I/O	Clock input terminal for serial data input and output
15	SO	I/O	Key data output
16	SI	I	Display data input
17	RES	I	Reset input
18	TEST	I	Test input
19	OSC-IN	I	System clock input
20	OSC-OUT	O	System clock output
21	VSS		GND
22,23	VDD2,VDD1		LCD power supply 2,1
24	VDD		Power supply
25–28	COM1–4	O	LCD common signal 1–4
29–42	SEG1–14	O	LCD segment signal 1–14
43–48	NC		Not used

IC's marked by are MOS type.*
Be careful in handling them because they are very liable to be damaged by electrostatic induction.

*PDC015C



*PDR025A



● **Pin Functions (PDR025A)**

Pin No.	Pin Name	I/O	Format	Function and Operation
1	$\overline{\text{MCMUT}}$	I	C	Mechanism mute request
2	TAPLD	I	C	Tape loading input
3	EO	O	C	Error output
4	VDD1			Power supply
5	GND			GND
6	VCOIN	I		AM/FM VCO IN
7	ASENS	I		ACC power sense input
8	VDD2			Power supply
9	LCK	O	C	Clock output(Key & display microcomputer)
10	LDT	O	C	Data output(Key & display microcomputer)
11	LDI	I	C	Data input(Key & display microcomputer)
12	FMSD	I		FM SD input
13	AMIF	I		AM IF signal input
14	SL	I		Signal level input
15	$\overline{\text{ST}}$	I		Stereo input
16	$\overline{\text{SK}}$	I	C	SK signal input
17	DK	I	C	DK signal input
18	$\overline{\text{SWVDD}}$	I	C	Grille power supply control
19	PEE	O	C	Beep tone output
20	VST	O	C	Strobe pulse output for electronic volume
21	VCK	O	C	Clock output for electronic volume
22	VDT	O	C	Data output for electronic volume
23	NC			Not used
24	XOUT	O	C	Crystal oscillating element connection pin
25	XIN	I		Crystal oscillating element connection pin
26	GND			GND
27–30	NC			Not used
31	TESTIN	I	C	Test program mode input
32	DSENS	I	C	Grille detach sense input
33,34	GND			GND
35–38	NC			Not used
39	$\overline{\text{MUTE}}$	O	C	System mute output
40	DKOUT	O	C	DK interrupt output
41	ILLPW	O	C	Not used
42	AUTANT	O	C	Not used
43	SYSPW	O	C	System power supply control output
44–46	NC			Not used
47	NR	O	C	NR output
48	MTL	O	C	METAL output
49	MS	O	C	Cassette mechanism MS sense output
50	MECPW	O	C	Cassette mechanism power
51	AMPW	O	C	AM power control output
52	LOCL	O	C	LOC "L" set up
53	LOCH	O	C	LOC "H" set up
54	FMPW	O	C	FM power control output
55	$\overline{\text{SEEK}}$	O	C	Seek output
56	MONO	O	C	Forced mono output
57	LW	O	C	LW output
58	GND			GND
59–62	DM3–DM0	I		Destination • function input
63	$\overline{\text{NOR}}$/REV	I	C	Tape running input
64	DM4	I		Not used

Format	Meaning
C	C MOS

7. LCD

● **CAW1377**

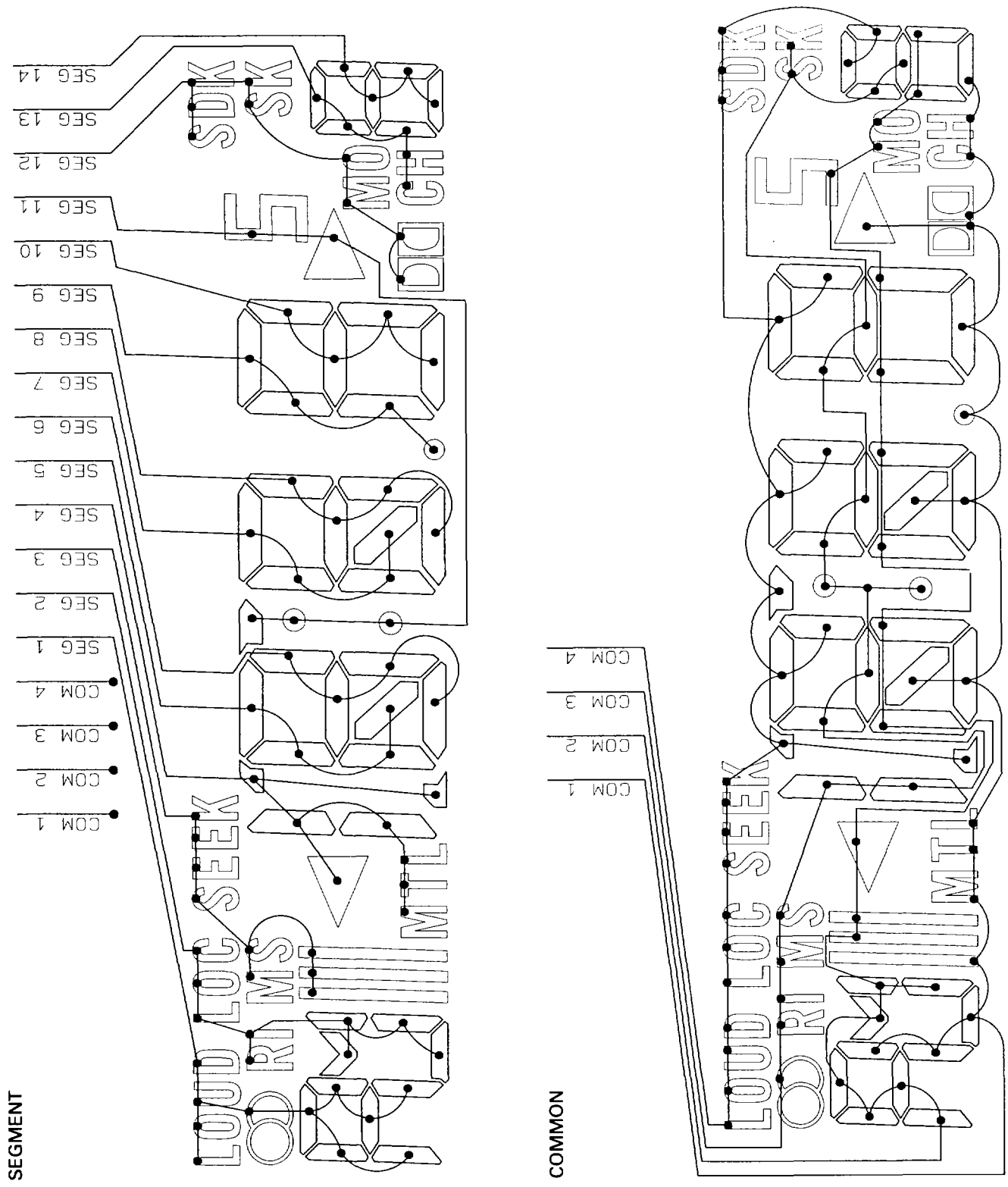


Fig. 4

8. ELECTRICAL PARTS LIST

NOTE:

- Parts whose parts numbers are omitted are subject to being not supplied.
- The part numbers shown below indicate chip components.

Chip Resistor

RS1/○S○○○J,RS1/○○S○○○J

Chip Capacitor (except for CQS.....)

CKS....., CCS....., CSZS.....

=====Circuit Symbol & No. Part Name=====	Part No.
Unit Number :	
Unit Name : Tuner Amp Unit(1400/X1M/UC)	
MISCELLANEOUS	
IC 251	LA3161P
IC 301	HA12134AF
IC 401	AN6263N
IC 451	SN761025DL
IC 551	HA13150A
IC 601	PDR025A
Q 301 302	DTC114TS
Q 401 605 961 963	DTC114ES
Q 501 506 602 603 606	2SC1740S
Q 502	2SK330
Q 504	2SC2498
Q 551 552 958	DTC124ES
Q 601 851 852 966	DTC143TS
Q 604	DTA114ES
Q 607	DTC124TS
Q 853	DTA124ES
Q 951	2SD1859
Q 956 962	2SA933S
Q 957	2SB1243
Q 959	2SD2395
Q 960	2SA1674
Q 965	2SB1242
Q 967	2SC1740S
D 251 502 503 601 602 604 608 609 610 611	1SS270
D 501	MTZJ3R0B
D 551	CWW1352
D 603	HZS7LB1
D 605 615	HZS7LA1
D 606	HZS7LC3
D 612 613 614	1SS270
D 621 962	1SS270
D 951 952 954 955 958	1SR139-200
D 953	HZS6LB2
D 956	HZS9LB3
D 961	HZS9LA2
L 501 Ferri-Inductor	CTF-157
L 601 602 Ferri-Inductor	LAU2R2K
L 951 Choke Coil 600H	CTH1160
X 601 Crystal Resonator 4.500MHz	CSS1077
VR 301 302 Semi-fixed 33kΩ(B)	CCP1209
FM/AM Tuner Unit	CWE1417
RESISTORS	
R 251 252	RD1/4PU273J
R 253 254	RS1/10S470J
R 255 256 983	RS1/10S472J
R 257 258	RS1/10S104J
R 301 302 451	RD1/4PU272J
R 303 304 512 628	RD1/4PU332J
R 305 306 309 608 609	RD1/4PU104J
R 307 501 618 620 622 959 981	RD1/4PU223J
R 308	RD1/4PU183J
R 401 402	RD1/4PU822J
R 403	RD1/4PU100J
R 404	RD1/4PU684J
R 452	RS1/10S272J
R 453	RD1/4PU151J
R 454	RS1/10S151J
R 455 456 570 952	RS1/10S101J
R 457 458 502 567 571 617 621 623	RD1/4PU103J
R 459 460 461 503 507 616 631 951 958 964	RD1/4PU472J
R 465 466	RD1/4PU223J
R 467 468	RD1/4PU151J
R 504 615	RD1/4PU152J
R 505 506 516 518 956 962 965 970	RD1/4PU102J
R 508 522 523 575 576	RD1/4PU222J
R 509 573 574	RD1/4PU222J
R 511	RD1/4PU101J
R 513 853 854	RD1/4PU821J
R 514 960 973	RD1/4PU331J
R 515	RD1/4PU680J
R 527 528	RD1/4PU162J
R 529	RD1/4PU330J
R 530	RD1/4PU393J
R 531 982	RS1/10S103J
R 551 552 553 554 555 556 557 558	RD1/4PU2R2J
R 568	RS1/10S153J
R 569	RS1/10S221J
R 577 578 579 580 606	RS1/10S222J
R 605	RS1/10S473J
R 607 610 630 957	RD1/4PU473J
R 611	RD1/4PU473J
R 612 613 614 625	RD1/4PU222J
R 619 980	RD1/4PU392J
R 624	RS1/8S104J
R 626	RD1/4PU104J
R 851 852	RS1/10S223J
R 961	RD1/4PU511J
R 963	RD1/4PU471J
R 969	RD1/4PU472J
R 971 972	RD1/4PU1R5J
CAPACITORS	
C 251 252 507	CKSQYB681K50
C 253 254	CEA2R2M50LS2
C 255 256 263 403	CEA101M10LS
C 257 258 475 476	CKSQYB333K25
C 301 302 304 451 452 453 454 463 464	CEA010M50LL
C 305 306	CKSQYF224Z25
C 307 555 556 557 558 559 560 561 562 604	CKSQYB104K16
C 308 517 518 606	CKSQYB104K16
C 309	CEA4R7M35LS2
C 310 551 552 553 554 603	CEA4R7M35LL

=====Circuit Symbol & No.	Part Name=====	Part No.
C 311 312 513 515 520 521		CKSQYB223K25
C 401		CKSQYB562K50
C 402		CCSQCH330J50
C 404		CKSYB823K50
C 459 460 465 466 483 851 852		CEA100M16LL
C 461 462		CKSQYB822K50
C 467 468		CKSQYB152K50
C 469 470		CKSQYB183K25
C 471 472 501 510 589 590 591 592 609 953		CKSQYB102K50
C 473 474 484		CEA2R2M50LL
C 477 478 508 509 512 963 964		CCSQCH101J50
C 485		CKSQYB332K50
C 487		CKSYB104K16
C 489 504 506 511 958		CKSQYB103K25
C 502 525		CKSYB473K16
C 503	4.7μF/16V	CCH1005
C 516 526 607		CKSQYB473K16
C 541		CCSQCH100D50
C 570		CEAS100M16
C 571		CEAS330M10
C 572 573		CKSQYB104K25
C 601		CCSQCH110J50
C 602		CCSQCH100D50
C 611		CKSYB103K25
C 951	3300μF/16V	CCH1018
C 952		CEAS331M16
C 957 959	330μF/10V	CCH1181
C 960		CEA101M16LL

Unit Number : CWM4585
Unit Name : Key Board Unit(KEH-1400/X1M/UC, 1400/X1M/IT, 1450/X1M/ES,1150/X1M/ES)

MISCELLANEOUS

IC 901		PDC015C
D 901		MA151WK
D 902		MA151WA
D 903		MA110
L 901	Ferri-Inductor	LAU150K
S 901 902 903 904 905 906 907 908 909 910		CSG1055
S 911 912 913 914 915 916		CSG1055
IL 901 902 903	Lamp 14V 65mA	CEL1470
LCD 901	LCD	CAW1377

RESISTORS

R 901 902	RS1/10S222J
R 903 904 905 906 907 908 909 910 911 912	RS1/10S471J
R 913	RS1/10S682J
R 917	RS1/10S472J
R 946	RS1/10S473J

CAPACITORS

C 901	CEA100M16LL
C 902 903	CKSQYB103K25
C 904	CCSQCH181J50
C 905	CKSQYB104K16

Unit Number : CWE1417
Unit Name : FM/AM Tuner Unit(KEH-1400/X1M/UC,1450/X1M/ES, 1311/X1M/UC,1100/X1M/UC,1150/X1M/ES)

MISCELLANEOUS

IC 1	PA4023A
IC 2	PA4024A
Q 1 31 202	2SC2412KLN
Q 2 203	DTC124EU
Q 3	3SK263
Q 201	2SK932
D 1 2	RD39JS
D 4	1SV251
D 5 7 8	KV1410
D 6 201 202	MA157

=====Circuit Symbol & No.	Part Name=====	Part No.
D 231		SVC253
L 2 4		CTC1108
L 3	Inductor	LCTB2R2K2125
L 5	Coil	CTC1107
L 51	Ferri-Inductor	LAU150K
L 201	Ferri-Inductor	LAU4R7K
L 202	Ferri-Inductor	LAU330K
L 203	Inductor	CTF1287
L 208	Inductor	LAU121K
L 231	Inductor	LAU3R3J3225
T 31	Coil	CTE1116
T 51	Coil	CTC1136
CF 51 52 53	Ceramic Filter	CTF1290
CF 232	Ceramic Filter	CTF1348
X 151	Ceramic Resonator 920.5kHz	CSS1365
X 231	Crystal Resonator 10.26MHz	CSS1111
VR 154	Semi-fixed 68kΩ(B)	CCP1211

RESISTORS

R 1 2	RS1/16S225J
R 4	RS1/16S154J
R 5	RS1/16S391J
R 6 10 202	RS1/16S223J
R 7 247	RS1/16S123J
R 8 17	RS1/16S332J
R 9	RS1/16S473J
R 11	RS1/16S124J
R 13	RS1/16S563J
R 15	RS1/16S271J
R 16	RS1/16S104J
R 18	RS1/16S332J
R 31	RS1/16S470J
R 32 215	RS1/16S822J
R 33	RS1/16S822J
R 34 35	RS1/16S331J
R 51	RS1/16S271J
R 52	RS1/16S560J
R 55	RS1/16S102J
R 56	RS1/16S823J
R 61	RS1/16S392J
R 62	RS1/16S273J
R 101	RS1/16S272J
R 102	RS1/16S682J
R 103	RS1/16S333J
R 104	RS1/16S334J
R 105	RS1/16S683J
R 107	RS1/16S222J
R 151	RS1/16S222J
R 152	RS1/16S393J
R 239	RS1/16S104J
R 155	RS1/16S273J
R 156	RS1/16S243J
R 157	RS1/16S203J
R 160	RS1/16S222J
R 161	RS1/16S563J
R 162	RS1/16S105J
R 163	RS1/16S223J
R 203	RS1/16S225J
R 204	RS1/16S103J
R 206	RS1/16S220J
R 207	RS1/16S101J
R 208 217	RS1/16S102J
R 209	RS1/16S471J
R 214	RS1/16S822J
R 231	RS1/16S272J
R 232	RS1/16S473J
R 237	RS1/16S103J
R 238	RS1/16S104J
R 239	RS1/16S104J

=====Circuit Symbol & No.	Part Name=====	Part No.
R 240		RS1/16S332J
R 241		RS1/16S202J
R 243		RS1/16S183J
R 244		RS1/16S472J
CAPACITORS		
C 1		CCSQCH060D50
C 2		CCSRCH020C50
C 4		CCSRCH820J50
C 6		CCSRCH820J50
C 8 18 25 31 52 59 62 105 107 213		CKSRYB103K25
C 9 34 56 152 160 241		CKSQYB104K16
C 10		CCSRCH0R5C50
C 11		CEA010M50LL
C 12 13 17 19 20		CKSRYB222K50
C 14		CCSRCH220J50
C 15		CCSRCH060D50
C 16		CCSRCH080D50
C 21		CEA100M16LL
C 22		CCSRTH090D50
C 23		CCSRTH120J50
C 24		CCSRCH471J50
C 26		CCSRCH101J50
C 32		CKSQYB472K50
C 33		CCSRCH050C50
C 36		CCSRRH201J50
C 51		CKSRYB223K25
C 54		CCSRCH470J50
C 55		CKSQYB223K25
C 57		CKSRYB472K50
C 58 234		CEA330M10LL
C 60		CKSRYB102K50
C 61		CKSRYB102K50
C 63		CEAR22M50LL
C 101		CEA100M10NPLL
C 102		CKSRYB182K50
C 103		CKSRYB682K25
C 104		CEA2R2M50LL
C 106		CCSRCH151J50
C 151		CKSRYB472K50
C 153 157		CEA3R3M50LL
C 154		CKSQYB104K16
C 158		CKSYB474K16
C 159		CEA220M6R3LL
C 161 209		CKSQYB104K16
C 162		CEA3R3M50LL
C 163		CKSRYB102K50
C 170 202		CCSRCH100D50
C 201 250		CCSRCH471J50
C 203 235		CKSRYB332K50
C 204 205 236 244		CKSQYB473K16
C 206 233		CKSQYB104K16
C 207		CCSRCH560J50
C 211		CCSRCH101J50
C 212		CEA470M6R3LL
C 216		CCSRCH101J50
C 217		CEA1R5M50LL
C 219		CCSRCH471J50
C 220 230		CKSRYB103K25
C 231		CCSRCH330J50
C 232		CCSRCH150J50
C 237		CCSRCH180J50
C 239		CKSRYB472K50
C 240 242		CEAR47M50LL
C 243		CEAR33M50LL
C 245		CKSRYB183K25
C 246		CKSQYB473K16

=====Circuit Symbol & No.	Part Name=====	Part No.
Unit Number :		
Unit Name	: Cassette P.C.Board(KEH-1400/X1M/UC,1450/X1M/ES, 1300/X1M/EW,1300SDK/X1M/GR,1400/X1M/IT,1311/X1M/UC)	
D 1		1SR-35-100A
S 1	Switch(Load)	ESN1016
S 2	Switch(Mute)	ESN1017
S 3	Switch(FWD/REV)	ESH1006
Miscellaneous Parts List		
M 1	Motor Unit	EXA1444
HD 1	Head Assy	EXA1443
SO 1	Solenoid	EXP1012
Unit Number :		
Unit Name	: Cassette P.C.Board(KEH-1100/X1M/UC,1150/X1M/ES)	
S 1	Switch(Load)	ESN1016
S 2	Switch(Mute)	ESN1017
S 3	Switch(FWD/REV)	ESH1006
Miscellaneous Parts List		
M 1	Motor Unit	EXA1444
HD 1	Head Assy	EXA1443

● The KEH-1300/X1M/EW, KEH-1300SDK/X1M/GR, KEH-1400/X1M/IT, KEH-1450/X1M/ES, KEH-1311/X1M/UC, KEH-1100/X1M/UC and KEH-1150/X1M/ES Tuner Amp Unit Parts Lists enumerate the parts which differ from those enumerated in the KEH-1400/X1M/UC Parts List only. The parts other than those enumerated in the former are identical with those in the latter, to which you are requested to refer, accordingly. The KEH-1400/X1M/UC Tuner Amp Unit Parts List is given on page 14.

Tuner Amp Unit

	1400/X1M/UC	1450/X1M/ES	1311/X1M/UC	1100/X1M/UC	1150/X1M/ES
Circuit Symbol & No.	Part No.	Part No.	Part No.	Part No.	Part No.
IC301	HA12134AF	HA12134AF	·····	·····	·····
IC401	AN6263N	AN6263N	AN6263N	·····	·····
IC551	HA13150A	HA13150A	HA13150A	PA3029B	PA3029B
VR301,302	CCP1209	CCP1209	·····	·····	·····
Q301,302	DTC114TS	DTC114TS	·····	·····	·····
Q401	DTC114ES	DTC114ES	DTC114ES	·····	·····
R301,302	RD1/4PU272J	RD1/4PU272J	·····	·····	·····
R303,304	RD1/4PU332J	RD1/4PU332J	·····	·····	·····
R305,306,309	RD1/4PU104J	RD1/4PU104J	·····	·····	·····
R307	RD1/4PU223J	RD1/4PU223J	·····	·····	·····
R308	RD1/4PU183J	RD1/4PU183J	·····	·····	·····
R401,402	RD1/4PU822J	RD1/4PU822J	RD1/4PU822J	·····	·····
R403	RD1/4PU100J	RD1/4PU100J	RD1/4PU100J	·····	·····
R404	RD1/4PU684J	RD1/4PU684J	RD1/4PU684J	·····	·····
R465,466	RD1/4PU223J	RD1/4PU223J	RD1/4PU333J	RD1/4PU333J	RD1/4PU333J
R601	·····	·····	RD1/4PU472J	·····	·····
R602	·····	·····	·····	RD1/4PU472J	RD1/4PU472J
R604	·····	RD1/4PU472J	·····	·····	RD1/4PU472J
R631	RD1/4PU472J	·····	RD1/4PU472J	RD1/4PU472J	·····
C301,302,304	CEA010M50LL	CEA010M50LL	·····	·····	·····
C305,306	CKSQYF224Z25	CKSQYF224Z25	·····	·····	·····
C307,308	CKSQYB104K16	CKSQYB104K16	·····	·····	·····
C309	CEA4R7M16LS2	CEA4R7M16LS2	·····	·····	·····
C310	CEA4R7M35LL	CEA4R7M35LL	·····	·····	·····
C311,312	CKSQYB223K25	CKSQYB223K25	·····	·····	·····
C401	CKSQYB562K50	CKSQYB562K50	CKSQYB562K50	·····	·····
C402	CCSQCH330J50	CCSQCH330J50	CCSQCH330J50	·····	·····
C403	CEA101M10LS	CEA101M10LS	CEA101M10LS	·····	·····
C404	CKSQYB823K25	CKSQYB823K25	CKSQYB823K25	·····	·····

Tuner Amp Unit(1/2)

	1400/X1M/UC	1300/X1M/EW 1400/X1M/IT	1300SDK/X1M/GR
Circuit Symbol & No.	Part No.	Part No.	Part No.
IC601	PDR025A	PDR026A	PDR026A
IC701	·····	·····	LA2220
IC702	·····	·····	NJM4558M
X701	·····	·····	CSS1022
Q701	·····	·····	2SC1740S
Q702	·····	·····	DTC124TS
EF951	·····	CCG1003	CCG1003
FM/AM Tuner Unit	CWE1417	CWE1416	CWE1416
R527,528	RD1/4PU162J	RD1/4PU272J	RD1/4PU272J
R604,712	·····	·····	RD1/4PU472J
R631	RD1/4PU472J	RD1/4PU472J	·····
R701	·····	·····	RN1/10SE182D
R702	·····	·····	RN1/10SE473D
R703,714	·····	·····	RD1/4PU473J
R704	·····	·····	RD1/4PU222J
R705,715	·····	·····	RD1/4PU103J
R706	·····	·····	RD1/4PU123J
R707	·····	·····	RD1/4PU684J
R708,719	·····	·····	RD1/4PU153J

Tuner Amp Unit(2/2)

Circuit Symbol & No.	1400/X1M/UC Part No.	1300/X1M/EW 1400/X1M/IT Part No.	1300SDK/X1M/GR Part No.
R709	·····	·····	RS1/10S682J
R710	·····	·····	RD1/4PU152J
R711	·····	·····	RS1/10S564J
R713	·····	·····	RS1/10S823J
R717,718	·····	·····	RD1/4PU104J
R720	·····	·····	RN1/4PC1600D
C525	CKSYB473K16	CKSYB223K25	CKSYB223K25
C526	CKSQYB473K16	CKSQYB223K25	CKSQYB223K25
C701	·····	·····	CEAS470M10
C702	·····	·····	CEA100M16LL
C703,704	·····	·····	CQMA102J50
C705	·····	·····	CKSQYB222K50
C706,712,715,716	·····	·····	CKSQYB473K16
C707	·····	·····	CKSYB223K25
C708	·····	·····	CEA470M10LL
C709	·····	·····	CEAR33M50LL
C710	·····	·····	CQMA683J50
C711	·····	·····	CEA010M50LL
C713,714	·····	·····	CFTLA473J50
C717,718	·····	·····	CKSQYB102K50

● The KEH-1300/X1M/EW, KEH-1300SDK/X1M/GR, KEH-1311/X1M/UC and KEH-1100/X1M/UC Key Board Unit Parts Lists enumerate the parts which differ from those enumerated in the KEH-1400/X1M/UC, KEH-1400/X1M/IT, KEH-1450/X1M/ES and KEH-1150/X1M/ES Parts List only. The parts other than those enumerated in the former are identical with those in the latter, to which you are requested to refer, accordingly. The KEH-1400/X1M/UC, KEH-1400/X1M/IT, KEH-1450/X1M/ES and KEH-1150/X1M/ES Key Board Unit Parts List is given on page 14.

Key Board Unit

Circuit Symbol & No.	1400/X1M/UC(CWM4585) 1400/X1M/IT(CWM4711) 1450/X1M/ES(CWM4594) 1150/X1M/ES(CWM4597) Part No.	1300/X1M/EW(CWM4579) 1300SDK/X1M/GR(CWM4582) 1311/X1M/UC(CWM4588) 1100/X1M/UC(CWM4591) Part No.
IL 901,902,903	CEL1470	CEL1469

● The KEH-1300/X1M/EW, KEH-1300SDK/X1M/GR and KEH-1400/X1M/IT FM/AM Tuner Unit Parts Lists enumerate the parts which differ from those enumerated in the KEH-1400/X1M/UC, KEH-1450/X1M/ES, KEH-1311/X1M/UC, KEH-1100/X1M/UC and KEH-1150/X1M/ES Parts List only. The parts other than those enumerated in the former are identical with those in the latter, to which you are requested to refer, accordingly. The KEH-1400/X1M/UC, KEH-1450/X1M/ES, KEH-1311/X1M/UC, KEH-1100/X1M/UC and KEH-1150/X1M/ES FM/AM Tuner Unit Parts List is given on page 14.

FM/AM Tuner Unit

Circuit Symbol & No.	1400/X1M/UC, 1100/X1M/UC, 1450/X1M/ES, 1150/X1M/ES, 1311/X1M/UC CWE1417 Part No.	1300/X1M/EW, 1300SDK/X1M/GR 1400/X1M/IT CWE1416 Part No.
AR 1	·····	DSP-201M
CF 51,52,53	CTF1290	CTF1292
D 1,2	RD39JS	·····
L 6	·····	LCTBR15K608
Q 154	·····	DTC124EU
Q 165	·····	2SC2412KLN
TC 1	·····	CCL1042
R 1	RS1/16S225J	RS1/16S0R0J
R 2	RS1/16S225J	·····
R 62	RS1/16S273J	RS1/16S393J
R 154	·····	RS1/16S104J
R 163	RS1/16S223J	RS1/16S222J
R 243	RS1/16S183J	RS1/16S123J
R 244	RS1/16S472J	RS1/16S103J
C 15	CCSRCH060D50	·····
C 26	CCSRCH101J50	·····
C 60	CKSRYB102K50	·····
C 63	CEAR22M50LL	CEAR15M50LL
C 245	CKSRYB183K25	CKSRYB123K25

9. BLOCK DIAGRAM

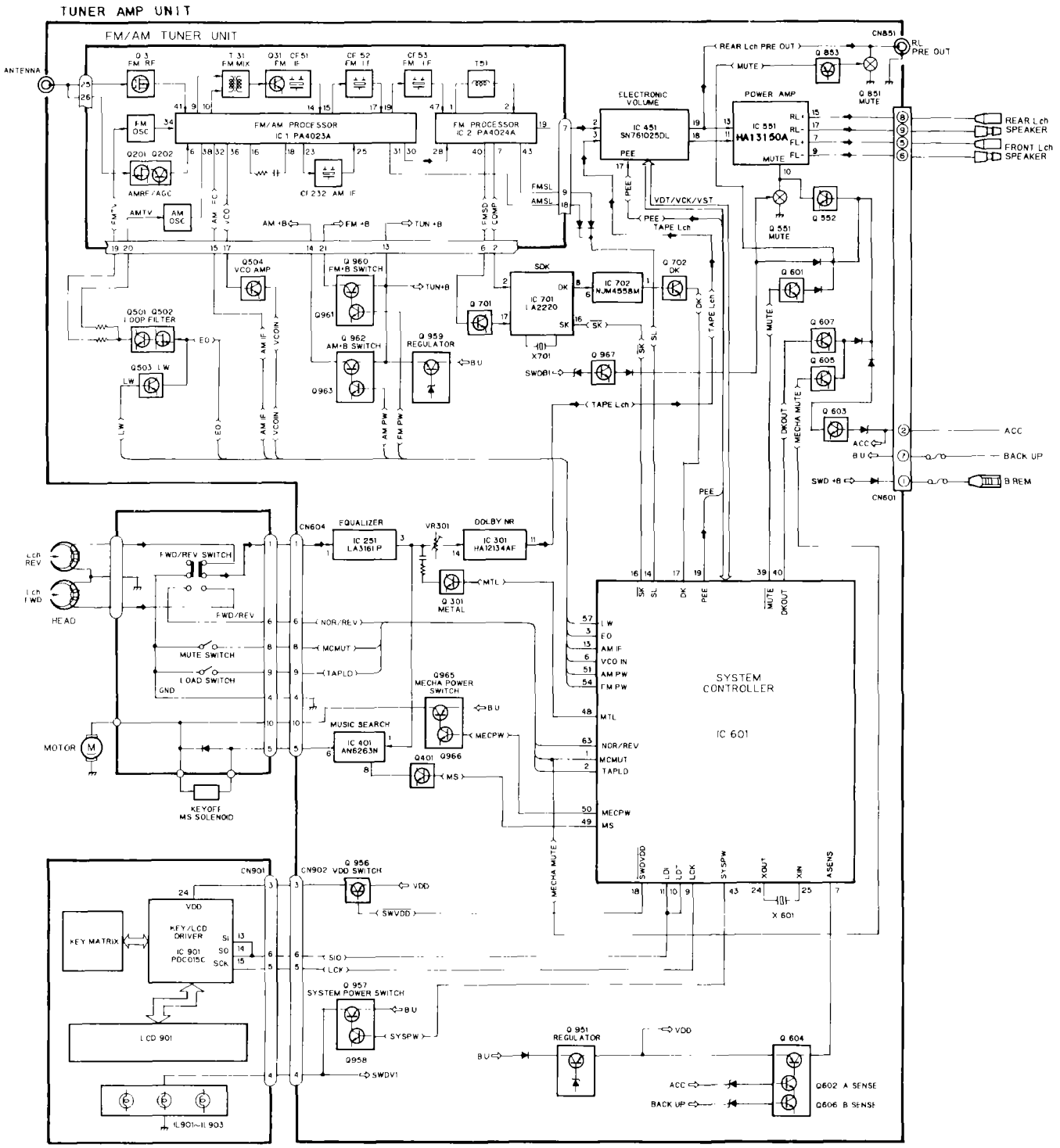
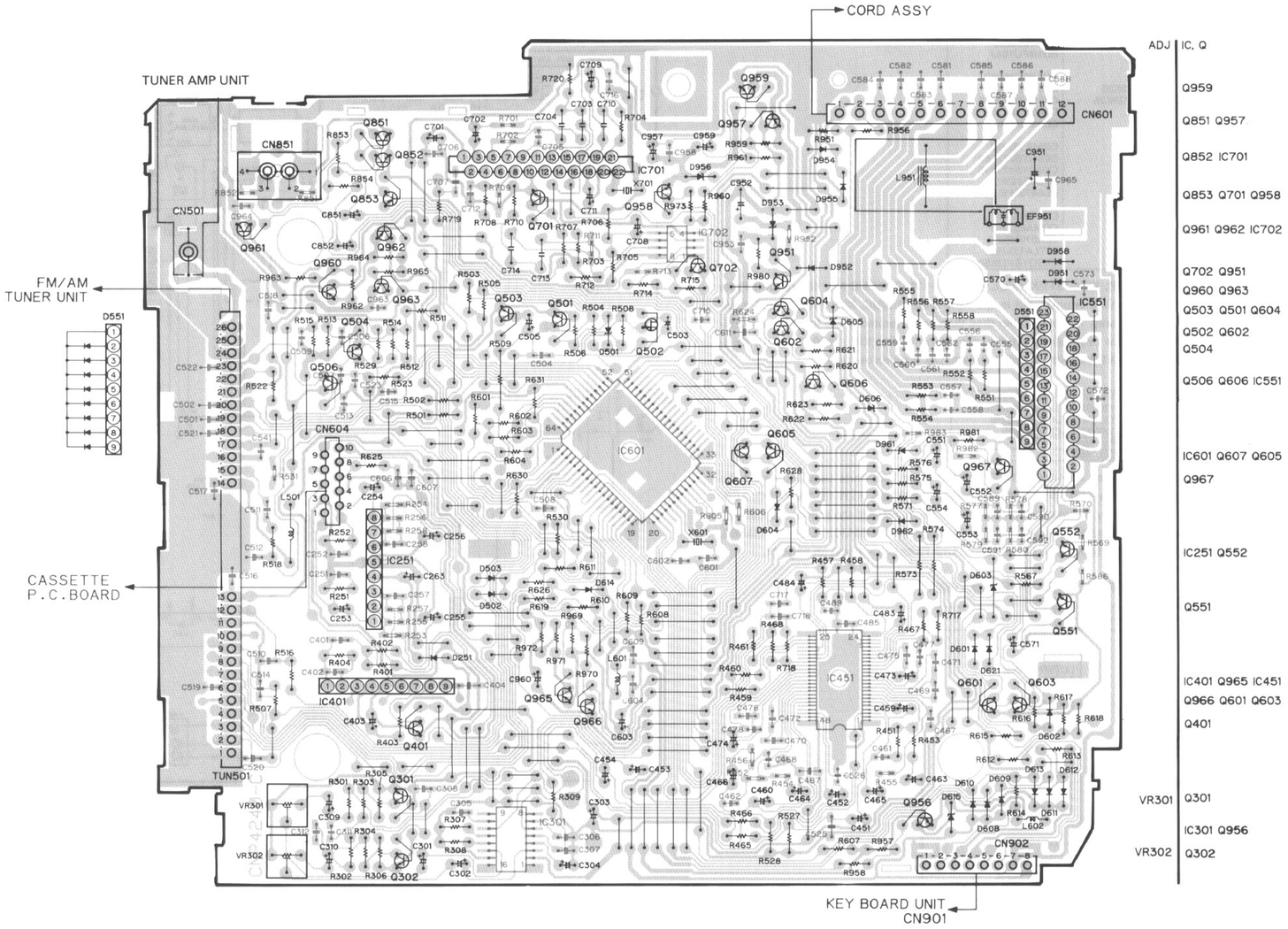
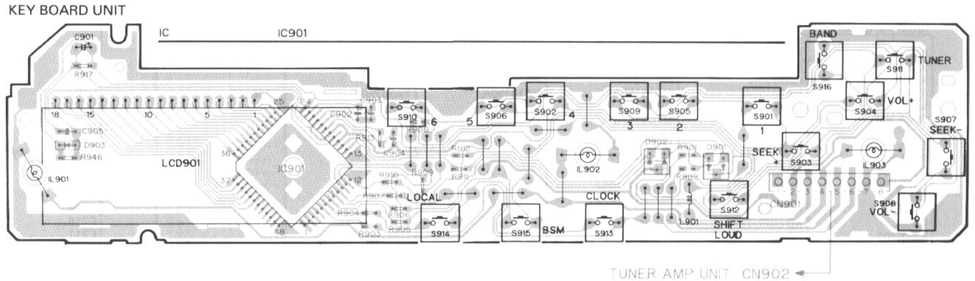
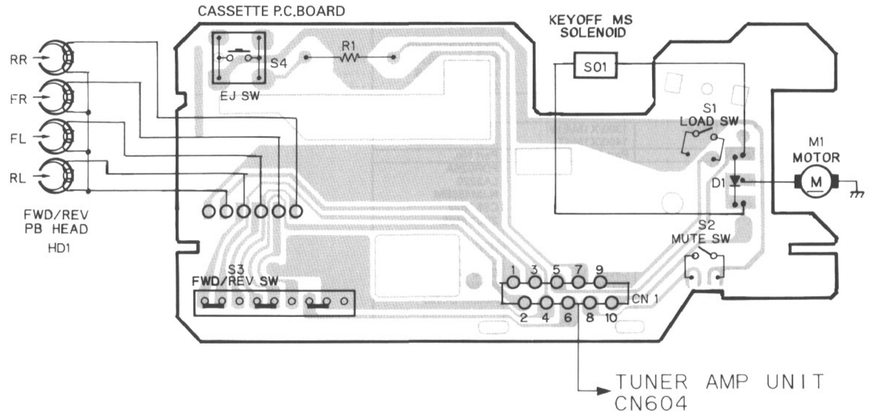


Fig. 5

10. CONNECTION DIAGRAM







NOTE:
The parts mounted on this PCB include all necessary parts for several destinations.
For further information for respective destinations, be sure to check with the schematic diagram.

Fig. 6

11. SCHEMATIC CIRCUIT DIAGRAM

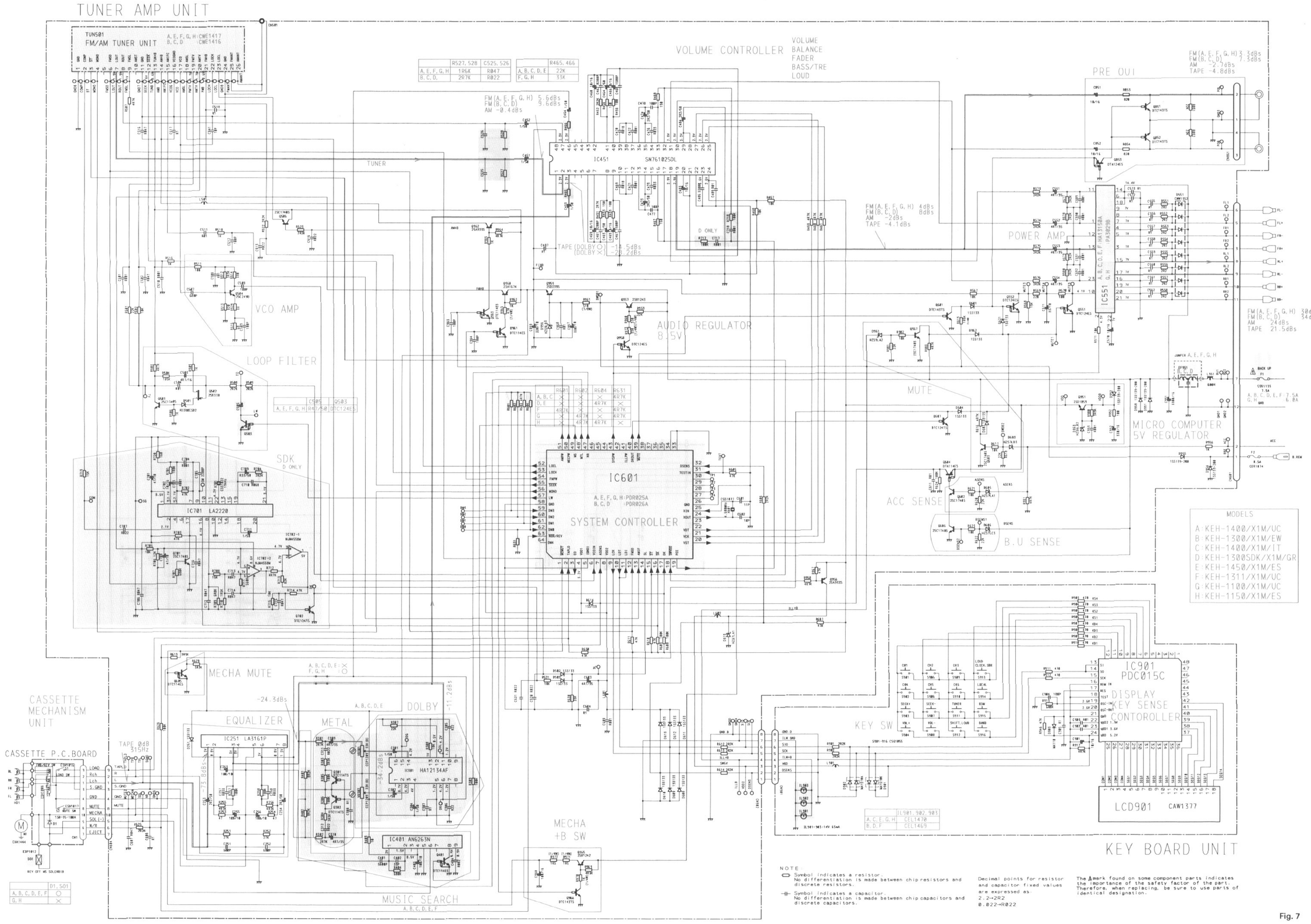


Fig. 7

12. CIRCUIT DIAGRAM AND PATTERN

12.1 FM/AM TUNER UNIT

● **Connection diagram**

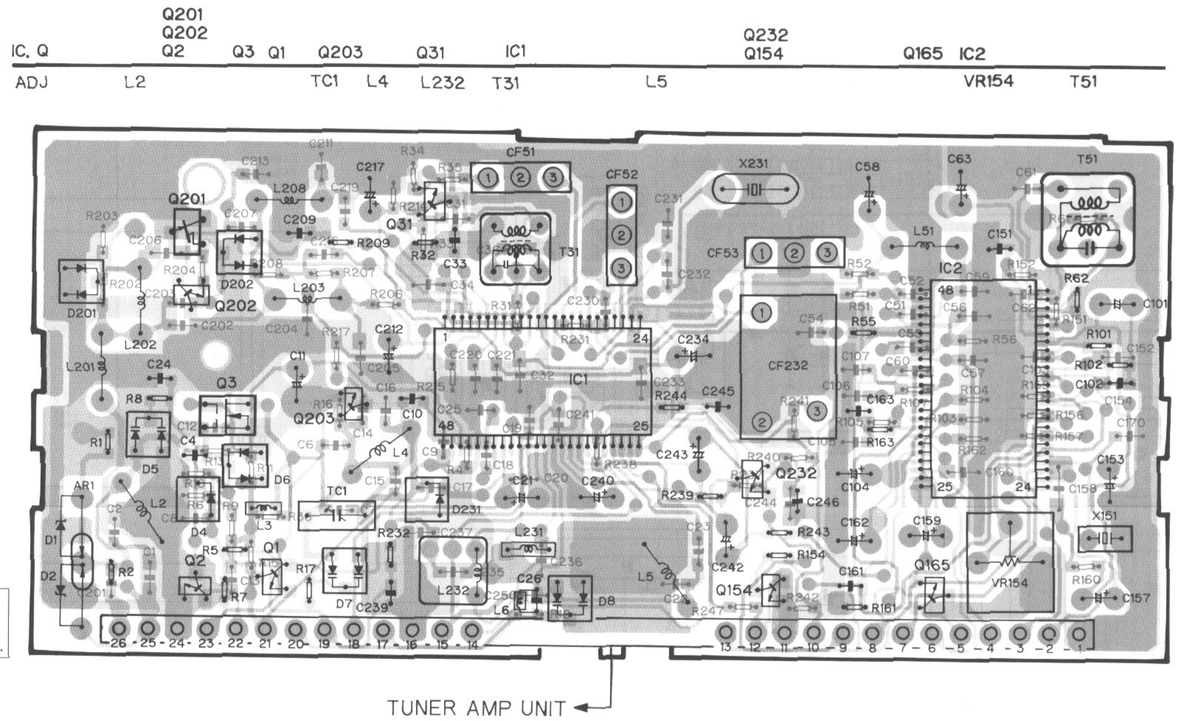


Fig. 8

NOTE:
The parts mounted on this PCB include all necessary parts for several destinations.
For further information for respective destinations, be sure to check with the schematic diagram.

● **Circuit diagram**

(KEH-1400/X1M/UC, 1450/X1M/ES, 1311/X1M/UC, 1100/X1M/UC, 1150/X1M/ES)

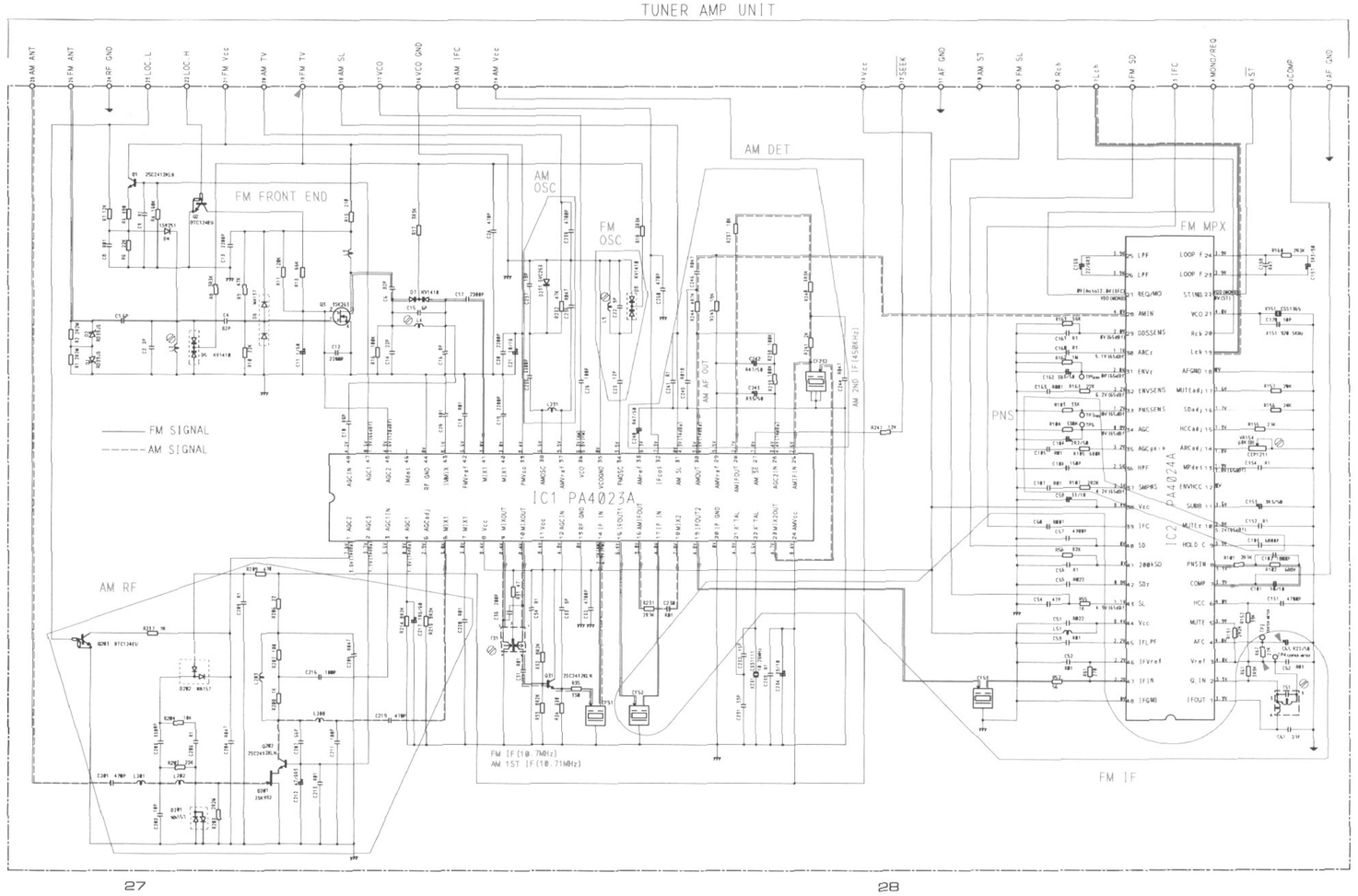


Fig. 9

● **Circuit diagram**

(KEH-1300/X1M/EW, 1300SDK/X1M/GR, 1400/X1M/IT)

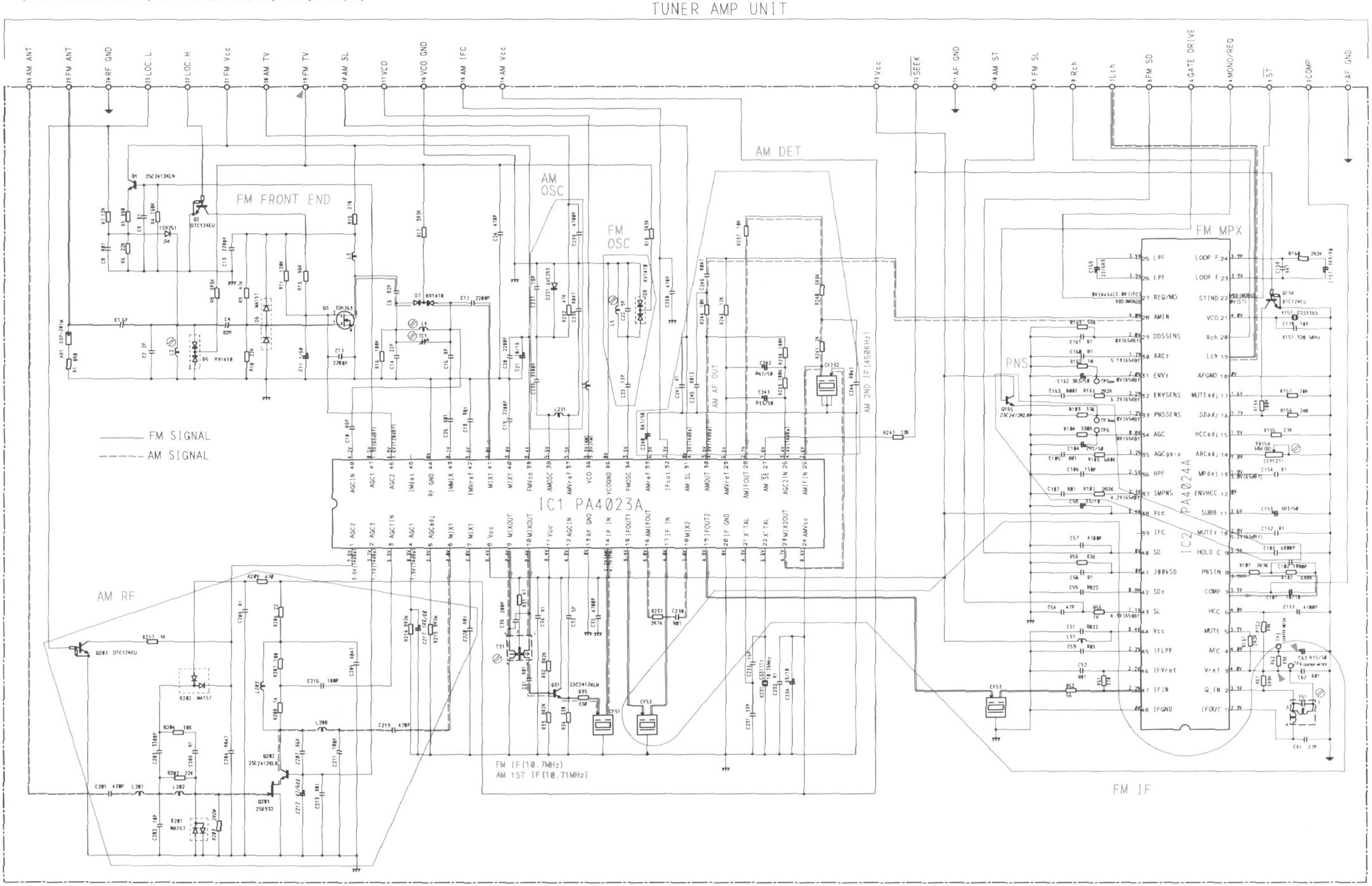


Fig. 10

13. EXPLODED VIEW AND PARTS LIST

13.1 CHASSIS

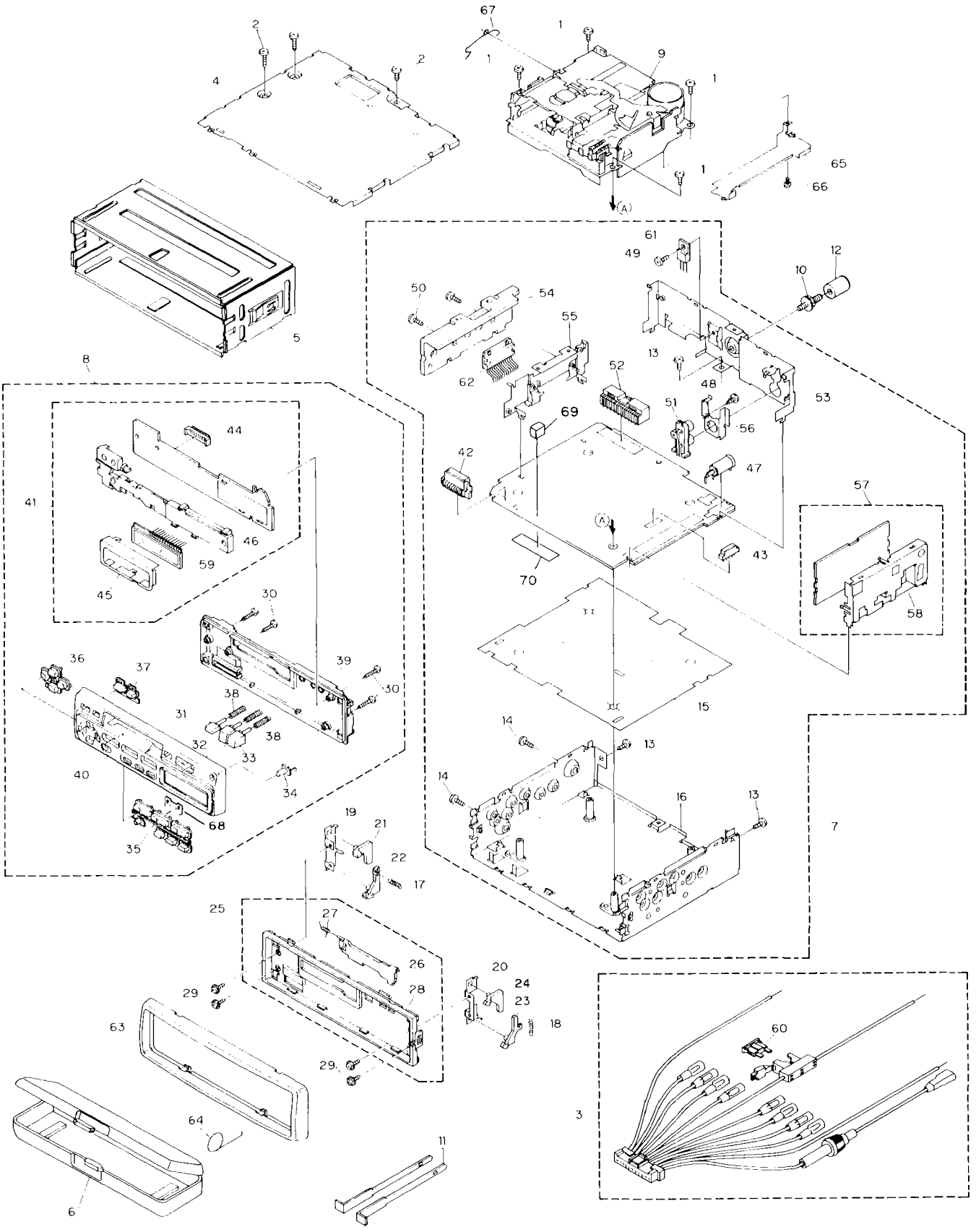


Fig. 11

NOTE:

● Parts marked by " * "are generally unavailable because they are not in our Master Spare Parts List.

● Parts List(KEH-1400/X1M/UC)

Mark	No.	Description	Part No.
	1	Screw	BSZ26P050FMC
	2	Screw	BSZ30P100FMC
	3	Cord Assy	CDE4951
	4	Case	CNB2010
	5	Holder	CNC5394
	6	Detach Case	CNS3860
	7	Tuner Amp Assy	CWM4583
	8	Detach Grille Assy	CXA8545
	9	Cassette Mechanism Unit	EXK3435
	10	Screw	CBA1304
	11	Handle	CNC5395
	12	Bush	CNV3930
	13	Screw	BSZ30P060FMC
	14	Screw	BSZ30P100FMC
	15	Insulator	CNM4625
	16	Chassis Unit	CXA8558
	17	Spring	CBH1834
	18	Spring	CBH1835
	19	Bracket	CNC6135
	20	Bracket	CNC6136
	21	Arm	CNV4358
	22	Arm	CNV4359
	23	Arm	CNV4437
	24	Arm	CNV4676
	25	Panel Unit	CXA8605
	26	Door	CAT1762
	27	Spring	CBH1838
*	28	Panel	CNS3768
	29	Screw	PMS20P030FZK
	30	Screw	BPZ20P120FZK
	31	Button(⏏)	CAC4613
	32	Button(◁◁)	CAC4614
	33	Button(▷▷)	CAC4615
	34	Button(⌂)	CAC4612
	35	Button(1,2,3,4,5,6,S)	CAC4616
	36	Button(◁,▷,+,-)	CAC4617
	37	Button(TUNER,BAND)	CAC4714
	38	Spring	CBH1836
	39	Cover	CNS3822
	40	Grille	CNS3832
	41	Key Board Unit	CWM4585
	42	Connector(CN902)	CKS2884
	43	Connector(CN604)	CKS3362
	44	Connector(CN901)	CKS2883
	45	Holder	CNC6314
	46	Conductor	CNV4442
	47	Antenna Jack(CN501)	CKX1006
	48	Screw	BPZ26P060FMC
	49	Screw	BSZ26P060FMC
	50	Screw	BSZ26P080FMC
	51	Pin Jack(CN851)	CKB1028
	52	Plug(CN601)	CKM1226
	53	Panel	CNB2014
	54	Heat Sink	CNC6217
	55	Holder	CNC6372
	56	Holder	CNC6531
	57	FM/AM Tuner Unit	CWE1417
	58	Holder	CNC6555
	59	LCD	CAW1377
	60	Auto Fuse(7.5A)	CEK1135
	61	Transistor(Q959)	2SD2395
	62	IC(IC551)	HA13150A
	63	Panel	CNS3862
	64	Spring	CBH1650
	65	Cover	ENC1452
	66	Screw	BSZ23P050FMC
	67	Spring	EBH1585
	68	·····	
	69	Spacer	CNM4919
	70	Spacer	CNM4921

● The KEH-1300/X1M/EW, KEH-1300SDK/X1M/GR, KEH-1400/X1M/IT, KEH-1450/X1M/ES, KEH-1311/X1M/UC, KEH-1100/X1M/UC and KEH-1150/X1M/ES Parts Lists enumerate the parts which differ from those enumerated in the KEH-1400/X1M/UC Parts List only. The parts other than those enumerated in the former are identical with those in the latter, to which you are requested to refer, accordingly. The KEH-1400/X1M/UC Parts List is given on page 31.

Mark No.	Description	1400/X1M/UC Part No.	1450/X1M/ES Part No.	1311/X1M/UC Part No.	1100/X1M/UC Part No.	1150/X1M/ES Part No.
3	Cord Assy	CDE4951	CDE4951	CDE4951	CDE4908	CDE4908
7	Tuner Amp Assy	CWM4583	CWM4592	CWM4586	CWM4589	CWM4595
8	Detach Grille Assy	CXA8545	CXA8551	CXA8547	CXA8549	CXA8553
9	Cassette Mechanism Unit	EXK3435	EXK3435	EXK3435	EXK3415	EXK3415
25	Panel Unit	CXA8605	CXA8605	CXA8605	CXA8845	CXA8845
40	Grille	CNS3832	CNS3834	CNS3833	CNS3835	CNS3836
41	Key Board Unit	CWM4585	CWM4594	CWM4588	CWM4591	CWM4597
60	Auto Fuse(7.5A)	CEK1135	CEK1135	CEK1135	·····	·····
62	IC(IC551)	HA13150A	HA13150A	HA13150A	PA3029B	PA3029B

Mark No.	Description	1400/X1M/UC Part No.	1300/X1M/EW Part No.	1400/X1M/IT Part No.	1300SDK/X1M/GR Part No.
3	Cord Assy	CDE4951	CDE4950	CDE4950	CDE4950
7	Tuner Amp Assy	CWM4583	CWM4577	CWM4577	CWM4580
8	Detach Grille Assy	CXA8545	CXA8538	CXA8540	CXA8542
16	Chassis Unit	CXA8558	CXA8558	CXA8558	CXA8662
25	Panel Unit	CXA8605	CXA8837	CXA8838	CXA8837
31	Button(⏏)	CAC4613	CAC4531	CAC4613	CAC4531
32	Button(◁◁)	CAC4614	CAC4532	CAC4614	CAC4532
33	Button(▷▷)	CAC4615	CAC4533	CAC4615	CAC4533
34	Button(⏏)	CAC4612	CAC4539	CAC4612	CAC4539
35	Button(1,2,3,4,5,6,S)	CAC4616	CAC4591	CAC4616	CAC4591
36	Button(◁,▷,+,-)	CAC4617	CAC4592	CAC4617	CAC459
37	Button(TUNER,BAND)	CAC4714	CAC4593	CAC4714	CAC4593
39	Cover	CNS3822	CNS3767	CNS3822	CNS3767
40	Grille	CNS3832	CNS3830	CNS3831	CNS3821
41	Key Board Unit	CWM4585	CWM4579	CWM4711	CWM4582
57	FM/AM Tuner Unit	CWE1417	CWE1416	CWE1416	CWE1416
63	Panel	CNS3862	·····	·····	·····
64	Spring	CBH1650	·····	·····	·····

13.2 CASSETTE MECHANISM UNIT

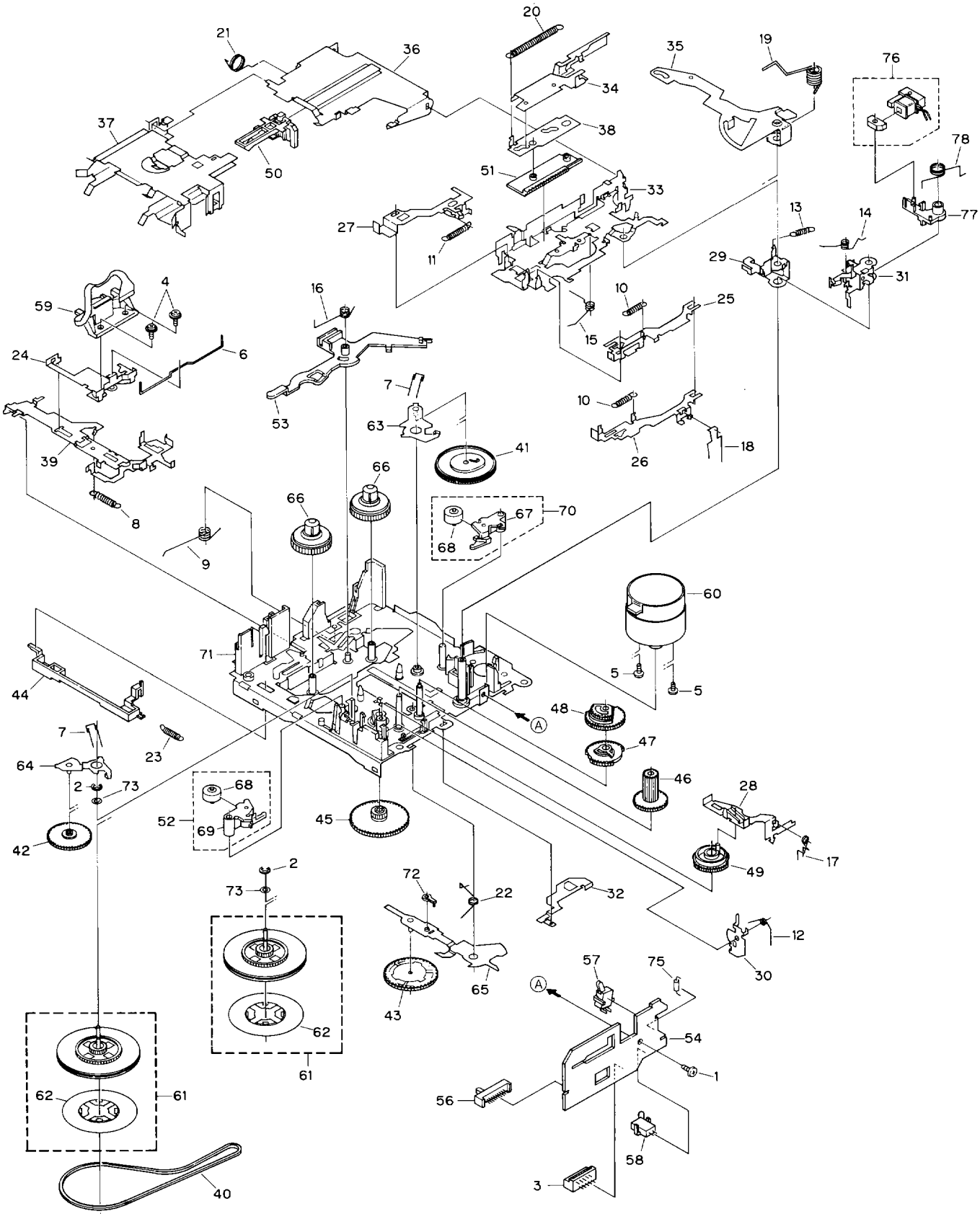


Fig. 12

● **Parts List**

Mark No.	Description	Part No.
1	Screw	BSZ23P050FMC
2	Washer	CBG1003
3	Connector(CN1)	CKS2829
4	Screw(M2x5)	EBA1028
5	Screw(M2x2.5)	EBA1037
6	Spring	EBH1554
7	Spring	EBH1555
8	Spring	EBH1556
9	Spring	EBH1557
10	Spring	EBH1558
11	Spring	EBH1559
12	Spring	EBH1560
13	Spring	EBH1561
14	Spring	EBH1562
15	Spring	EBH1563
16	Spring	EBH1564
17	Spring	EBH1565
18	Spring	EBH1566
19	Spring	EBH1567
20	Spring	EBH1568
21	Spring	EBH1569
22	Spring	EBH1571
23	Spring	EBH1579
24	Head Base	ENC1428
25	Lever	ENC1429
26	Lever	ENC1430
27	Lever	ENC1431
28	Lever	ENC1432
29	Arm	ENC1433
30	Arm	ENC1434
31	Arm	ENC1435
32	Arm	ENC1451
33	Bracket	ENC1437
34	Lever	ENC1438
35	Arm	ENC1439
36	Frame	ENC1440
37	Holder	ENC1441
38	Lever	ENC1446
39	Lever	ENC1454
40	Belt	ENT1027
41	Gear	ENV1469
42	Gear	ENV1470
43	Gear	ENV1471
44	Lever	ENV1472
45	Gear	ENV1474
46	Gear	ENV1475
47	Gear	ENV1493
48	Gear	ENV1477
49	Gear	ENV1478
50	Lever	ENV1480
51	Lever	ENV1487
52	Roller Unit	EXA1461
53	Arm	ENV1489
54	P.C.Board	ENP1148
55	•••••	
56	Switch(FWD/REV)(S3)	ESH1006
57	Switch(Load)(S1)	ESN1016
58	Switch(Mute)(S2)	ESN1017
59	Head Assy(HD1)	EXA1443
60	Motor Unit(M1)	EXA1444
61	Flywheel Unit	EXA1468
62	Plate	ENC1423
63	Arm Unit	EXA1447
64	Arm Unit	EXA1448
65	Arm Unit	EXA1449
66	Reel Unit	EXA1450
67	Pinch Holder	ENV1466
68	Pinch Roller	ENV1488
69	Pinch Holder	ENV1467
70	Roller Unit	EXA1460
71	Chassis Unit	EXA1465
72	Service Arm	EXX1048
73	Washer	HBF-179
74	•••••	
75	Diode(D1) (Except for KEH-1100/X1M/UC, 1150/X1M/ES)	1SR-35-100A
76	Solenoid(SO1) (Except for KEH-1100/X1M/UC, 1150/X1M/ES)	EXP1012
77	Arm (Except for KEH-1100/X1M/UC, 1150/X1M/ES)	ENV1491
78	Spring (Except for KEH-1100/X1M/UC, 1150/X1M/ES)	EBH1582

14. PACKING METHOD

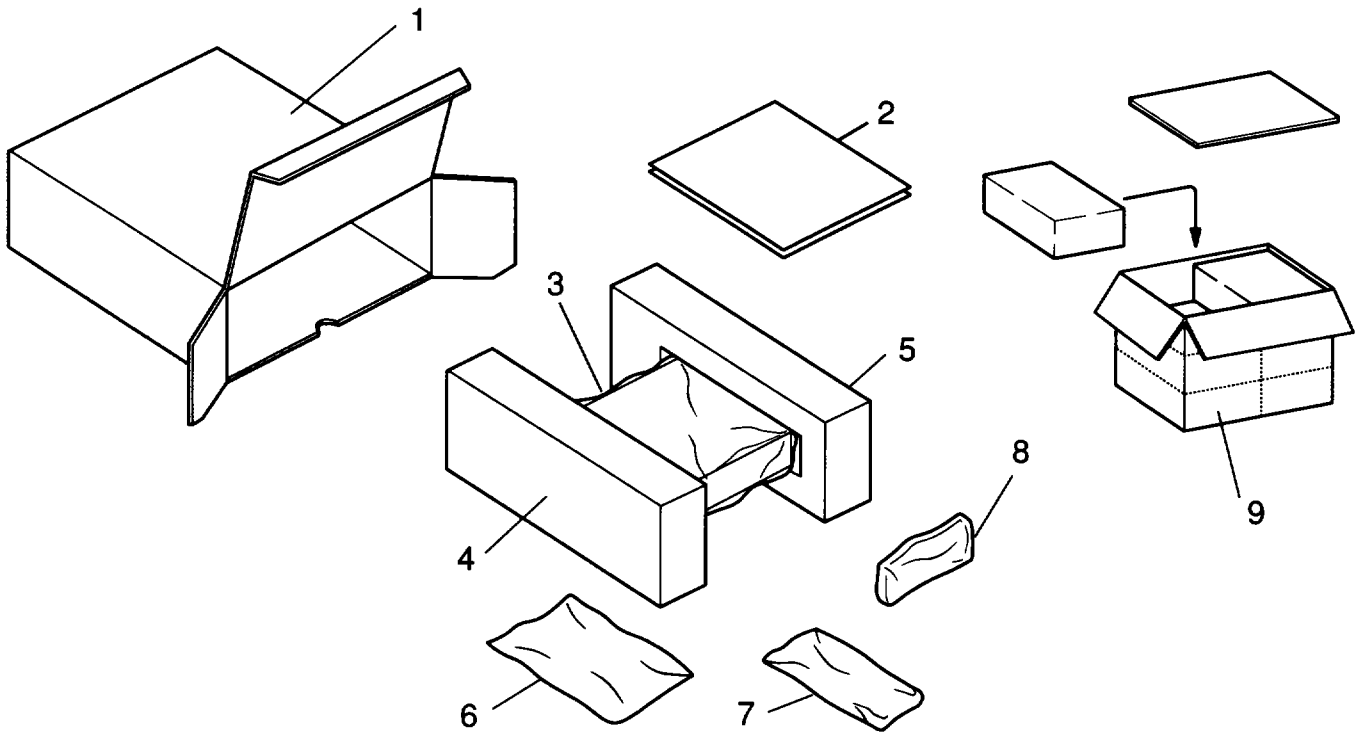


Fig. 13

● Parts List

Mark No.	Description	KEH-1400/X1M/UC Part No.	KEH-1450/X1M/ES Part No.	KEH-1311/X1M/UC Part No.	KEH-1100/X1M/UC Part No.	KEH-1150/X1M/ES Part No.
1	Carton	CHG2907	CHG2911	CHG2915	CHG2927	CHG2931
2	Owner's Manual	CRD1968	CRD1969	CRD1968	CRD1968	CRD1969
3	Polyethylene Bag	CEG1173	CEG-162	CEG1173	CEG1173	CEG-162
4	Protector(L)	CHP1607	CHP1607	CHP1607	CHP1607	CHP1607
5	Protector(R)	CHP1606	CHP1606	CHP1606	CHP1606	CHP1606
6	Accessory Assy	CEA2002	CEA2002	CEA2002	CEA2002	CEA2002
7	Cord Assy	CDE4951	CDE4951	CDE4951	CDE4908	CDE4908
8	Detach Case	CNS3860	CNS3860	CNS3860	CNS3860	CNS3860
9	Contain Box	CHL2907	CHL2911	CHL2915	CHL2927	CHL2931

Mark No.	Description	KEH-1300/X1M/EW Part No.	KEH-1400/X1M/IT Part No.	KEH-1300SDK/X1M/GR Part No.
1	Carton	CHG2895	CHG2903	CHG2899
2-1	Owner's Manual	CRD1965	·····	CRD1967
2-2	Owner's Manual	CRD1966	CRD1966	·····
2-3	Warranty Card	CRY1087	CRY1087	CRY1087
* 2-4	Passport	·····	·····	CRY1013
3	Polyethylene Bag	CEG-162	CEG-162	CEG-162
4	Protector(L)	CHP1607	CHP1607	CHP1607
5	Protector(R)	CHP1606	CHP1606	CHP1606
6	Accessory Assy	CEA1917	CEA1917	CEA1917
7	Cord Assy	CDE4950	CDE4950	CDE4950
8	Detach Case	CNS3860	CNS3860	CNS3860
9	Contain Box	CHL2895	CHL2903	CHL2899

● Owner's Manual

Part No.	Model	Language
CRD1968	KEH-1400/X1M/UC KEH-1311/X1M/UC KEH-1100/X1M/UC	English,French,Spanish
CRD1969	KEH-1450/X1M/ES KEH-1150/X1M/ES	English,French,Spanish,Arabic
CRD1965	KEH-1300/X1M/EW	English,Spanish,German,French
CRD1966	KEH-1300/X1M/EW KEH-1400/X1M/IT	Italian,Dutch
CRD1967	KEH-1300SDK/X1M/GR	German,French

● Accessory Assy

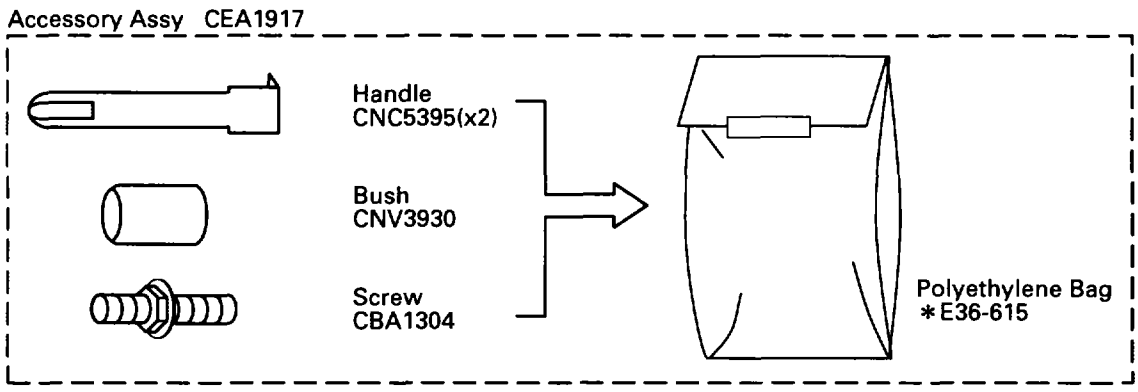


Fig. 14

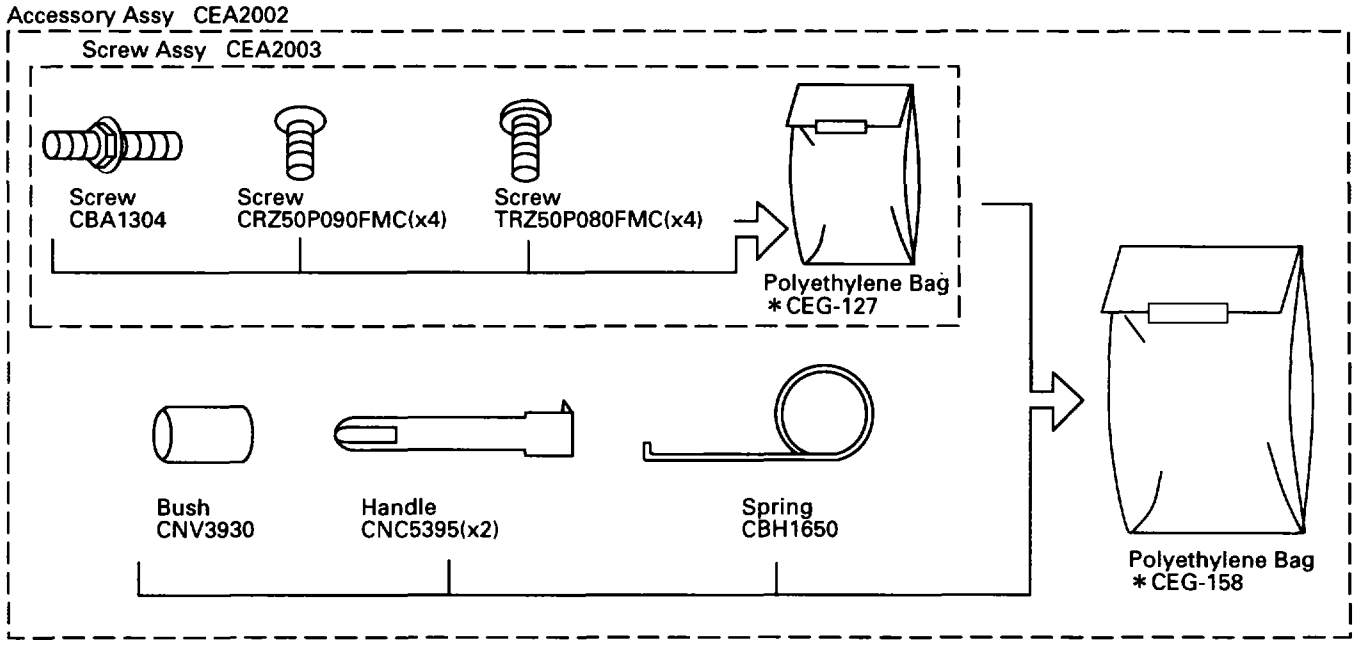


Fig. 15

PIONEER
The Art of Entertainment

Service Manual

ORDER NO.
CRT1800

CASSETTE MECHANISM UNIT

CX-644

NOTE:

- **This service manual describes the operation of the cassette mechanism incorporated in the models listed below.**
- **When performing repairs, use this manual together with the specific manual for the model under repair.**

Model	Service Manual	Cassette Mechanism Unit
KEH-2300R/X1MA/EW, /X1M/EW, /X1IN/EW KEH-2400R/X1MA/IT, /X1M/IT, /X1IN/IT KEH-2100R/X1MA/GR, /X1M/GR, /X1IN/GR	CRT1782	EXK3455
KEH-2300R/X1B/EW KEH-2400R/X1B/IT	CRT1817	
KEH-1300/X1M/EW, /X1MA/EW, /X1IN/EW, /X1N/EW KEH-1400/X1M/IT, /X1MA/IT, /X1IN/IT, /X1N/IT KEH-1300SDK/X1M/GR, /X1MAGR, /X1INGR, /X1NGR	CRT1799	EXK3435

Model	Service Manual	Cassette Mechanism Unit
KEH-1400/X1M/UC, /X1MA/UC, /X1IN/UC, /X1N/UC KEH-1450/X1M/ES, /X1MA/ES, /X1IN/ES, /X1N/ES KEH-1311/X1M/UC, /X1MA/UC, /X1IN/UC, /X1N/UC	CRT1798 CRT1799	EXK3435
KEH-1100/X1M/EW, /X1MA/EW, /X1IN/EW, /X1N/EW KEH-1200/X1M/IT, /X1MA/IT, /X1IN/IT, /X1N/IT	CRT1819	EXK3415
KEH-1100/X1M/UC, /X1MA/UC, /X1IN/UC, /X1N/UC KEH-1150/X1M/ES, /X1MA/ES, /X1IN/ES, /X1N/ES	CRT1798 CRT1799	

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3. ELECTRICAL PART INTERLINKAGE 4
4. OVERVIEW OF THE MAIN CAM GEARS 5
5. THE PRINCIPLES OF OPERATION 7
6. DISASSEMBLY 26
7. CAUTIONS ON ASSEMBLY AND DISASSEMBLY 28
8. TIPS FOR ASSEMBLY 29
9. ADJUSTMENT 32

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
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K-FFU. ARP. 1996 Printed in Japan

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1. SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5).
When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

NOTICE
(FOR CANADIAN MODEL ONLY)
Fuse symbols (fast operating fuse) and/or (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

REMARQUE
(POUR MODÈLE CANADIEN SEULEMENT)
Les symboles de fusible (fusible de type rapide) et/ou (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

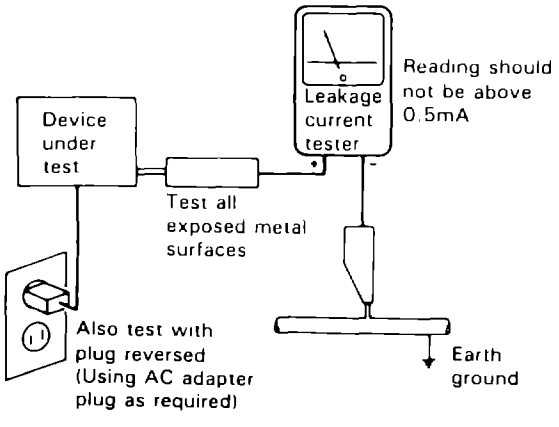
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.


Reading should not be above 0.5mA
Leakage current tester
Device under test
Test all exposed metal surfaces
Also test with plug reversed (Using AC adapter plug as required)
Earth ground

AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.
The use of a substitute replacement component which dose not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

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2. PACKING, EXPLODED VIEWS AND PARTS LIST

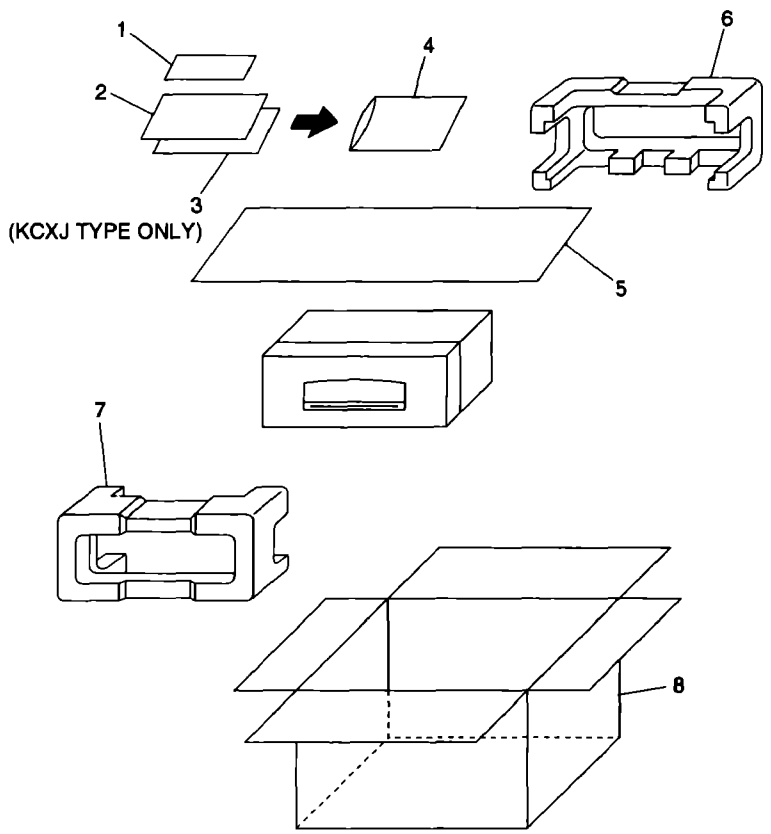
NOTES:

- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

2.1 PACKING

Parts List

Mark	No.	Description	Parts No.
NSP	1	WARRANTY CARD (KUXJ TYPE ONLY)	ARY1051
NSP	1	WARRANTY CARD (KCXJ TYPE ONLY)	ARY1075
	2	OPERATING INSTRUCTIONS (ENGLISH)	RRB1167
	3	OPERATING INSTRUCTIONS (FRENCH)(KCXJ TYPE ONLY)	RRC1005
NSP	4	POLYETHYLENE BAG	AHG1202
	5	PACKING SHEET	AHG7008
	6	REAR PAD	AHA1666
	7	FRONT PAD	AHA1665
	8	PACKING CASE	RHG1708



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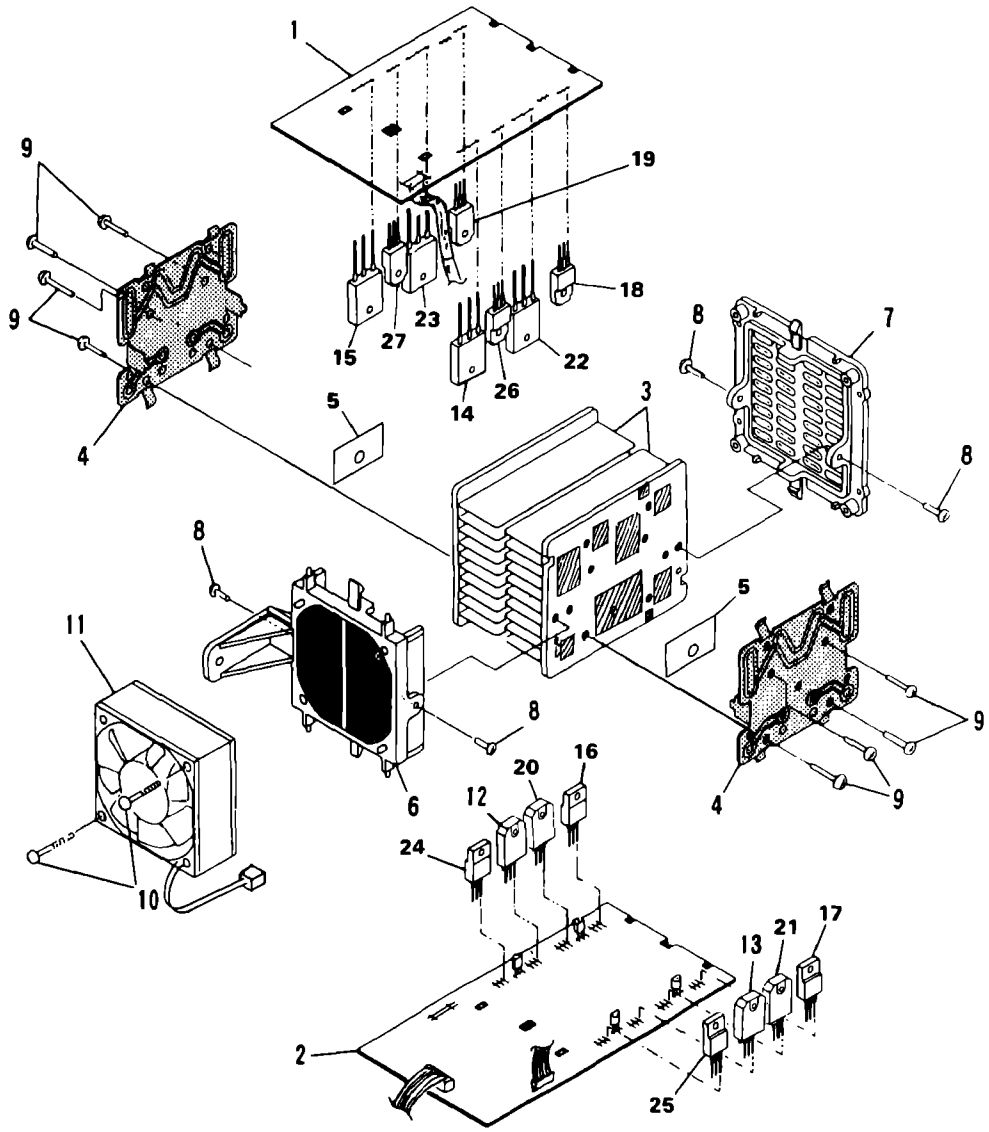
2.2 POWER AMP. UNIT SECTION



NOTE : Screws adjacent to ▼ mark on product are used for disassembly.

Notes

- *Ensure that silicon grease does not adhere to the MOLD A (No. 6) and MOLD B (No. 7).*

Parts List

Mark	No.	Description	Parts No.
	1	FRONT ASSY	RWZ3697
	2	REAR ASSY	RWZ3698
	3	HEAT SINK	ANH7008
	4	BRACKET	RNE1881
	5	MICA SHEET	REE1029
	6	MOLD A	AMR7005
	7	MOLD B	AMR7006
	8	SCREW (3×10)	ABA1021
	9	SCREW	BBZ30P140FZK
	10	SCREW	BPZ30P350FZK
	11	DC FAN MOTOR	AXM7003
⚠	12	TRANSISTOR (Q15)	2SA1264N
⚠	13	TRANSISTOR (Q16)	2SA1264N
⚠	14	TRANSISTOR (Q55)	2SA1264N
⚠	15	TRANSISTOR (Q56)	2SA1264N
⚠	16	TRANSISTOR (Q13)	2SA1837
⚠	17	TRANSISTOR (Q14)	2SA1837
⚠	18	TRANSISTOR (Q53)	2SA1837
⚠	19	TRANSISTOR (Q54)	2SA1837
⚠	20	TRANSISTOR (Q17)	2SC3181N
⚠	21	TRANSISTOR (Q18)	2SC3181N
⚠	22	TRANSISTOR (Q57)	2SC3181N
⚠	23	TRANSISTOR (Q58)	2SC3181N
⚠	24	TRANSISTOR (Q11)	2SC4793
⚠	25	TRANSISTOR (Q12)	2SC4793
⚠	26	TRANSISTOR (Q51)	2SC4793
⚠	27	TRANSISTOR (Q52)	2SC4793

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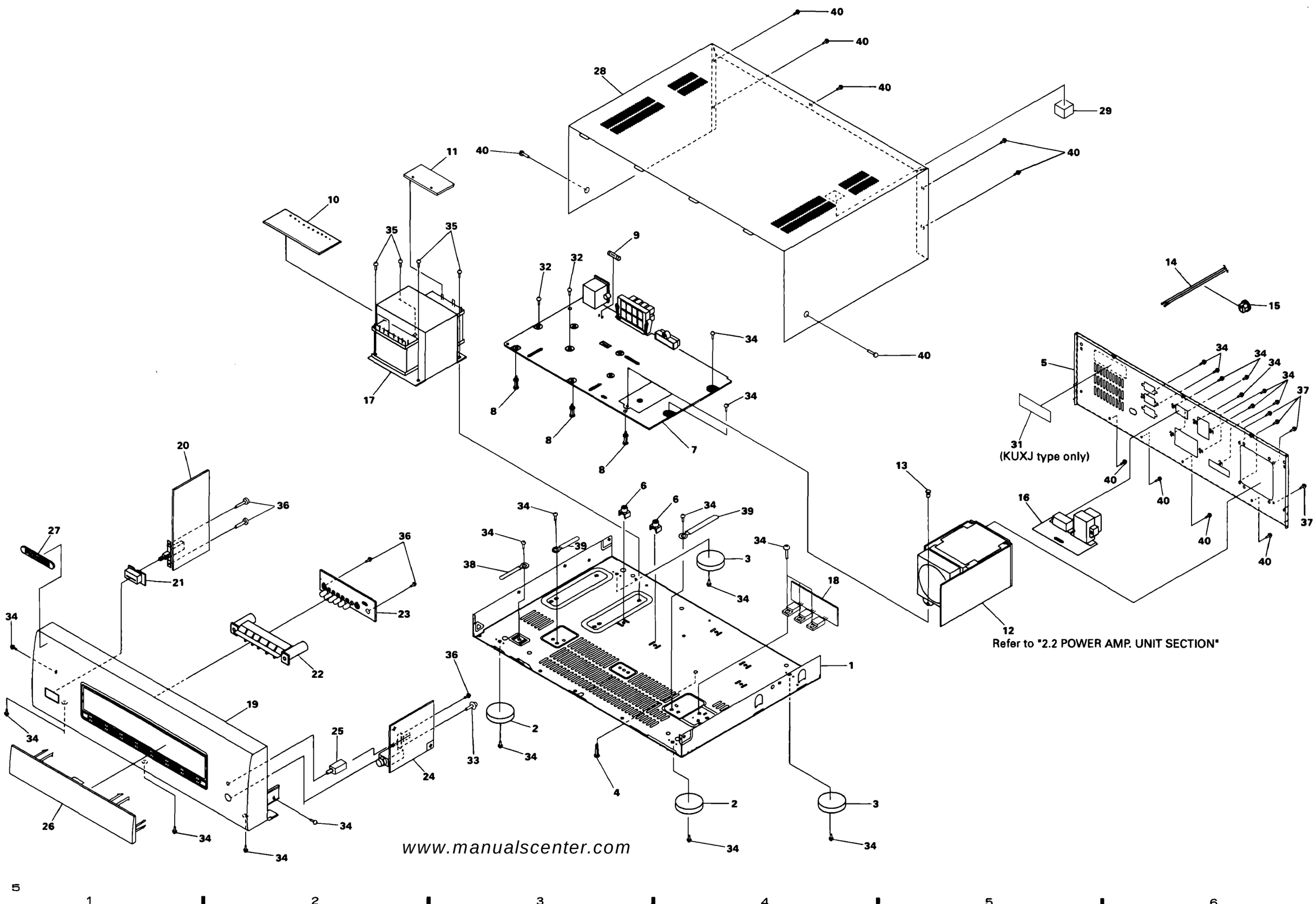
2.3 EXTERIOR



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Parts List

Mark	No.	Description	Parts No.
NSP	1	CHASSIS	RNE1874
	2	INSULATOR ASSY	PNW1912
	3	INSULATOR ASSY	DXA1490
NSP	4	PCB HOLDER	AEC1583
	5	REAR PANEL	RNA2037
	6	PCB MOLD	AMR2533
	7	AF ASSY	RWZ3686
	8	PCB SUPPORT	AEC1581
⚠	9	FUSE (FU151, 8.0A)	REK1086
	10	SECONDARY ASSY	RWZ3692
	11	PRIMARY ASSY	RWZ3772
	12	POWER AMP. UNIT	RXQ7024
	13	PUSH RIVET	AEC7010
⚠	14	AC POWER CORD	PDG1015
	15	CORD STOPPER	AEP – 113
	16	SP ASSY	RWZ3690
⚠	17	POWER TRANSFORMER (T1)	RTT1307
	18	REGURATOR ASSY	RWZ3687
	19	FRONT PANEL	RAH2692
	20	POWER SW ASSY	RWZ3691
	21	POWER BUTTON	AAD7064
	22	INDI. LENS	AAK7075
	23	LED ASSY	RWZ3689
	24	H.P. ASSY	RWZ3688
	25	SPEAKER BUTTON	AAD2416
	26	ILLUMI. PANEL	RAH2696
	27	NAME PLATE	PAM1608
	28	BONNET CASE	ANE1528
	29	SPACER	REB1300
	30	.....	
	31	65 LABEL (KUXJ TYPE ONLY)	ORW1069
	32	SCREW (3×18)	ABA1018
	33	SCREW (2.6×8)	ABA1095
	34	SCREW	BBZ30P080FZK
	35	SCREW	BBZ40P080FZK
	36	SCREW	BPZ26P080FMC
	37	SCREW	VPZ30P080FZK
	38	BINDER	AEC – 826
	39	BINDER	AEP – 215
	40	SCREW	BBT30P080FZK

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3. SCHEMATIC AND PCB CONNTCTION DIAGRAMS

NOTE FOR SCHEMATIC DIAGRAMS (Type 1A)

1. When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".

2. Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.

3. RESISTORS:
Unit: k:kΩ, M:MΩ, or Ω unless otherwise noted.
Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.
Tolerance: (F): ±1%, (G): ±2%, (K): ±10%, (M): ±20% or ±5% unless otherwise noted.

4. CAPACITORS:
Unit: p:pF or μF unless otherwise noted.
Ratings: capacitor (μF)/voltage(V) unless othrewise noted.
Rated voltage: 50V except for electrolytic capacitors.

5. COILS:
Unit: m:mH or μH unless otherwise noted.

6. VOLTAGE AND CURRENT:
V : Signal voltage at rated output.
or ← V:
DC voltage (V) at no input signal unless otherwise noted.
Value in ( ) is DC voltage at rated power.
⇦ mA or ← mA:
DC current at no input signal unless otherwise noted.

7. OTHERS:
- ⊘ or ⊘ : Adjusting point.
- ◄ : Measurement point.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.

8. SCH-□ ON THE SCHEMATIC DIAGRAM:
- SCH-□ indicates the drawing number of the schematic dia gram. (SCH stands for schematic diagram.)

9. SWITCHES (Underline indicates switch position):
H.P ASSY
S201 : SPEAKERS(A / A+B)

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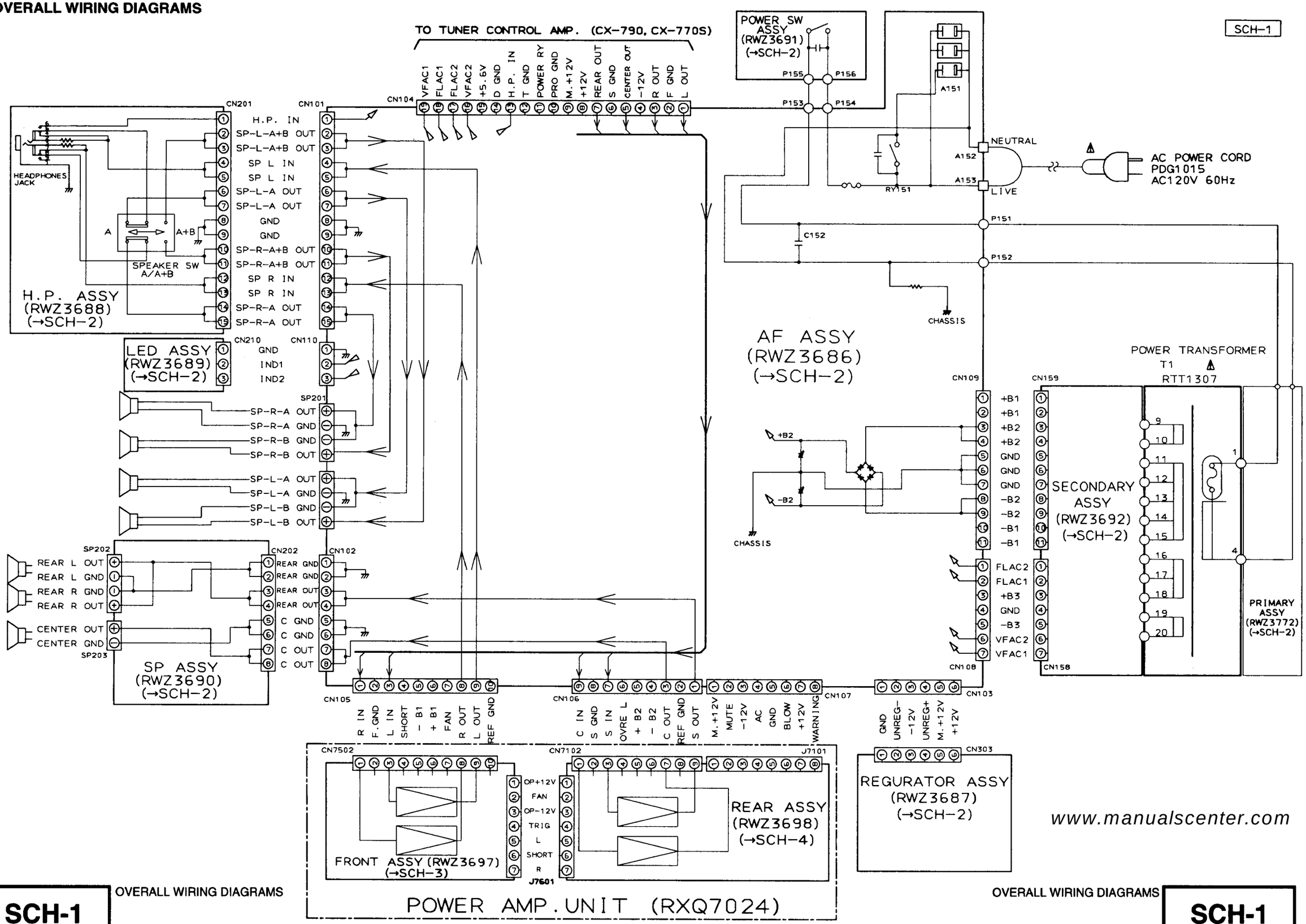
3.1 OVERALL WIRING DIAGRAMS



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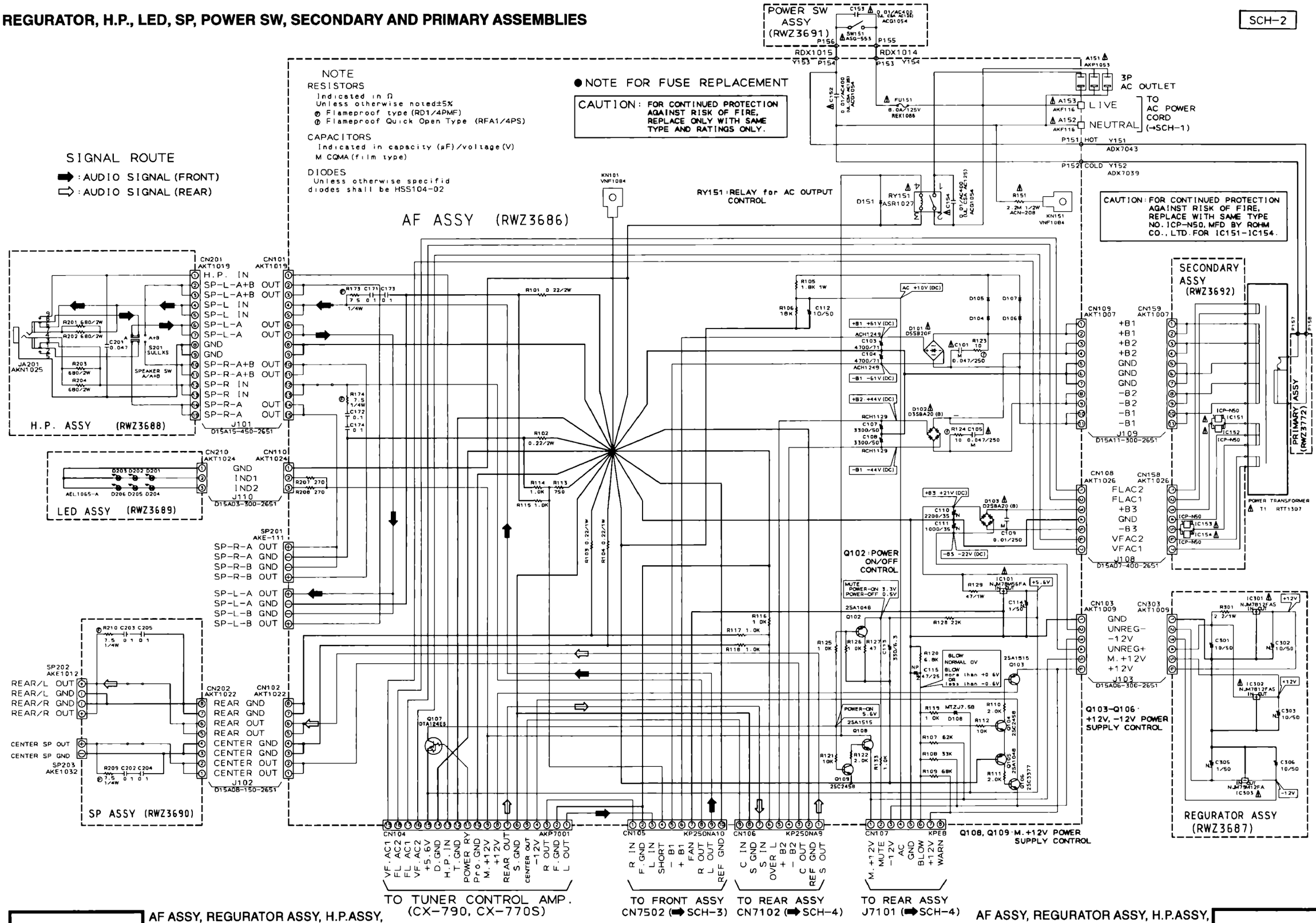
3.2 AF, REGURATOR, H.P., LED, SP, POWER SW, SECONDARY AND PRIMARY ASSEMBLIES

SCH-2


NOTE
RESISTORS
Indicated in Ω
Unless otherwise noted±5%
Ⓕ Flameproof type (RD1/4PMF)
Ⓠ Flameproof Quick Open Type (RFA1/4PS)
CAPACITORS
Indicated in capacity (μF)/voltage(V)
M CQMA(film type)
DIODES
Unless otherwise specifid
diodes shall be HSS104-02
SIGNAL ROUTE
: AUDIO SIGNAL (FRONT)
: AUDIO SIGNAL (REAR)
● NOTE FOR FUSE REPLACEMENT
CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE AND RATINGS ONLY.
AF ASSY (RWZ3686)
POWER SW ASSY (RWZ3691)
RY151 : RELAY for AC OUTLET CONTROL
CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE WITH SAME TYPE NO. ICP-N50, MFD BY ROHM CO., LTD. FOR IC151-IC154.
3P AC OUTLET
TO AC POWER CORD (→SCH-1)
LIVE
NEUTRAL
P151 HOT
P152 COLD
H.P. ASSY (RWZ3688)
LED ASSY (RWZ3689)
SP ASSY (RWZ3690)
SECONDARY ASSY (RWZ3692)
PRIMARY ASSY (RWZ3772)
REGURATOR ASSY (RWZ3687)
POWER TRANSFORMER T1
Q102 : POWER ON/OFF CONTROL
Q103–Q106 : +12V, –12V POWER SUPPLY CONTROL
Q108, Q109 : M.+12V POWER SUPPLY CONTROL
TO TUNER CONTROL AMP. (CX-790, CX-770S)
TO FRONT ASSY CN7502 (→SCH-3)
TO REAR ASSY CN7102 (→SCH-4)
TO REAR ASSY J7101 (→SCH-4)

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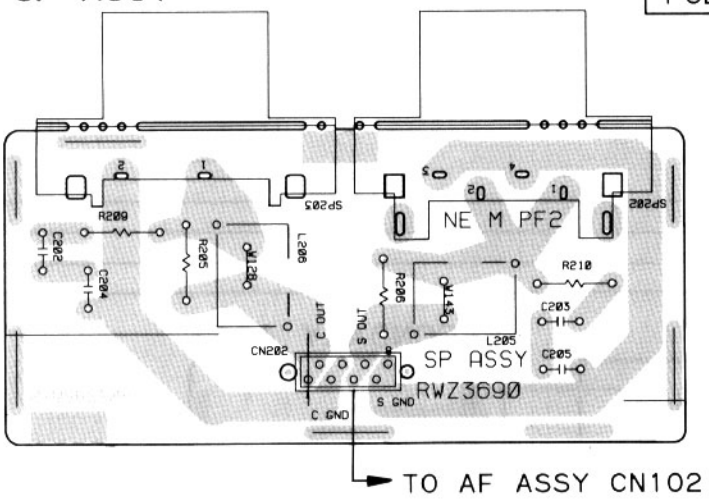
AF ASSY, REGURATOR ASSY, H.P.ASSY, LED ASSY, SP ASSY, POWER SW ASSY, SECONDARY ASSY, PRIMARY ASSY
SCH-2

SP ASSY

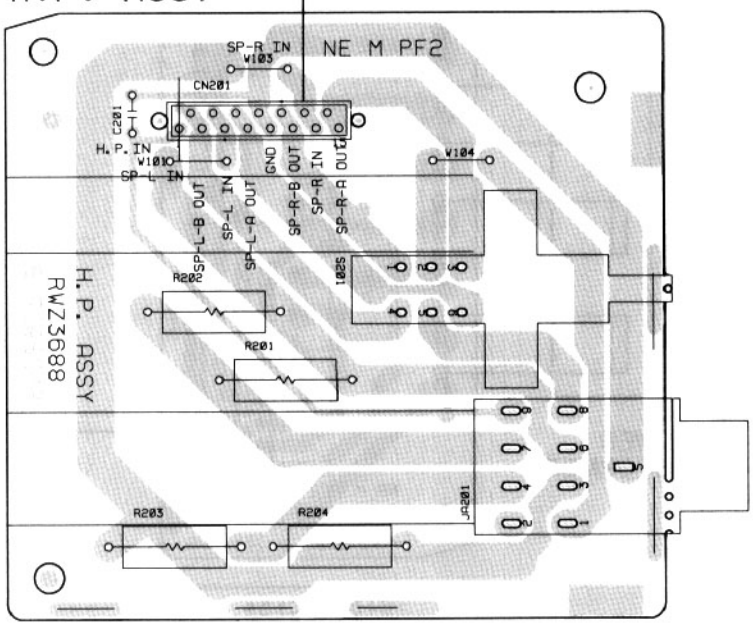
PCB-1



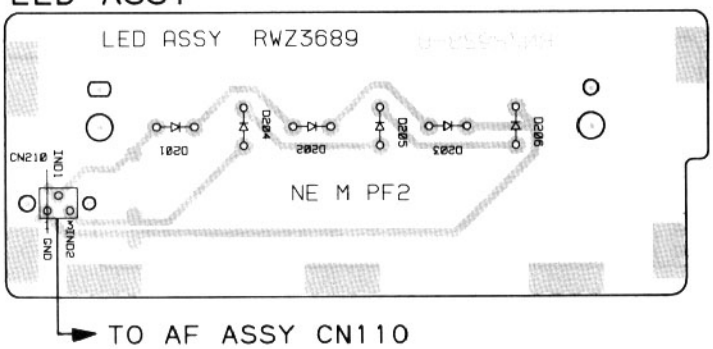
NOTE FOR PCB DIAGRAMS:
1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

Symbol in PCB Diagrams	Symbol in Schematic Diagrams	Part Name
B C E	B C E B C E	Transistor
B C E	B C E B C E	Transistor with resistor
D G S	D G S D G S	Field effect transistor
		Resistor array
		3-terminal regulator

H.P. ASSY



LED ASSY



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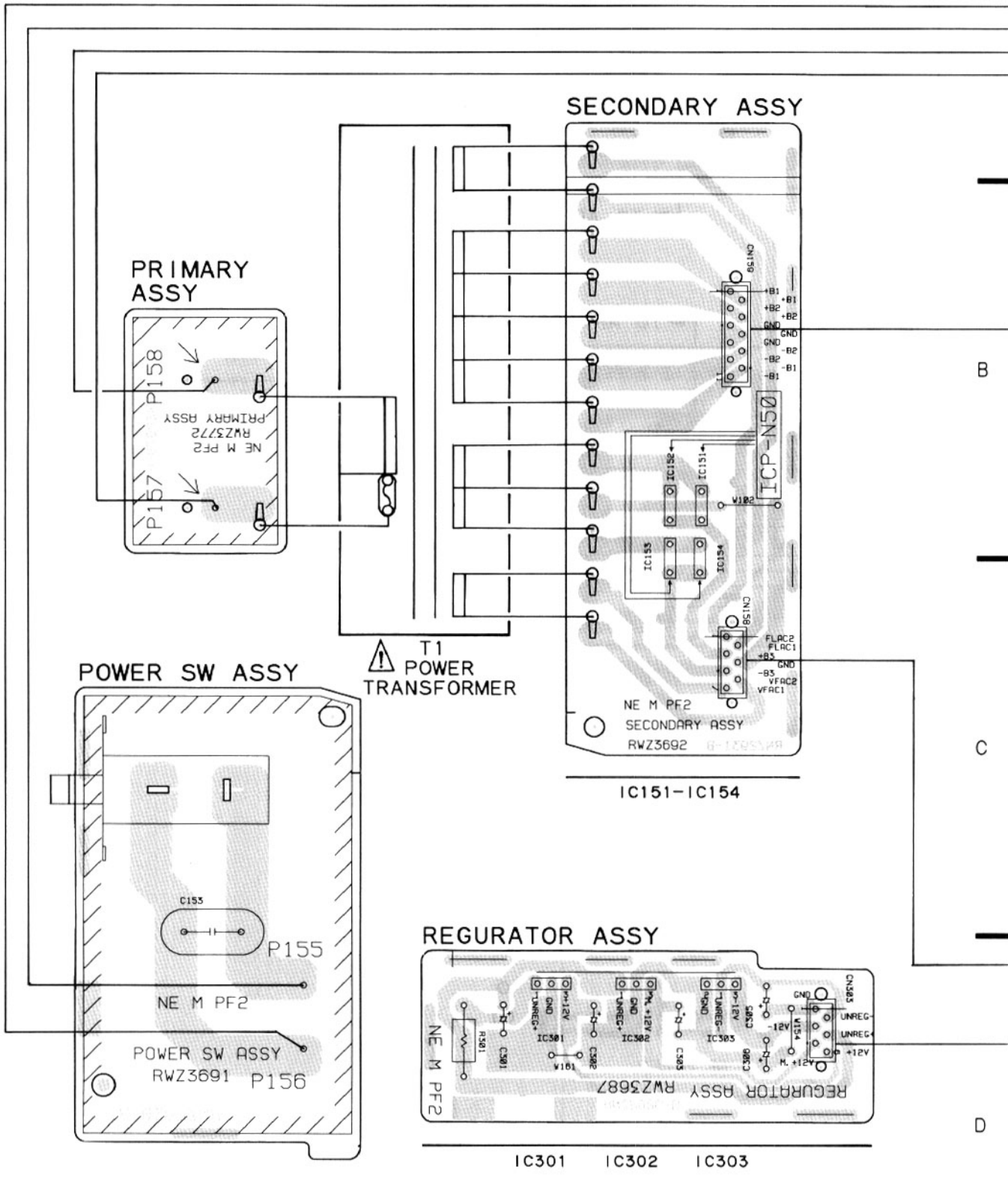
RNP1644-B

- This diagram is viewed from the mounted parts side.
- The parts mounted on this PCB include all necessary parts for several destinations. For further information for respective destinations, be sure to check with the schematic diagram.

PCB-2



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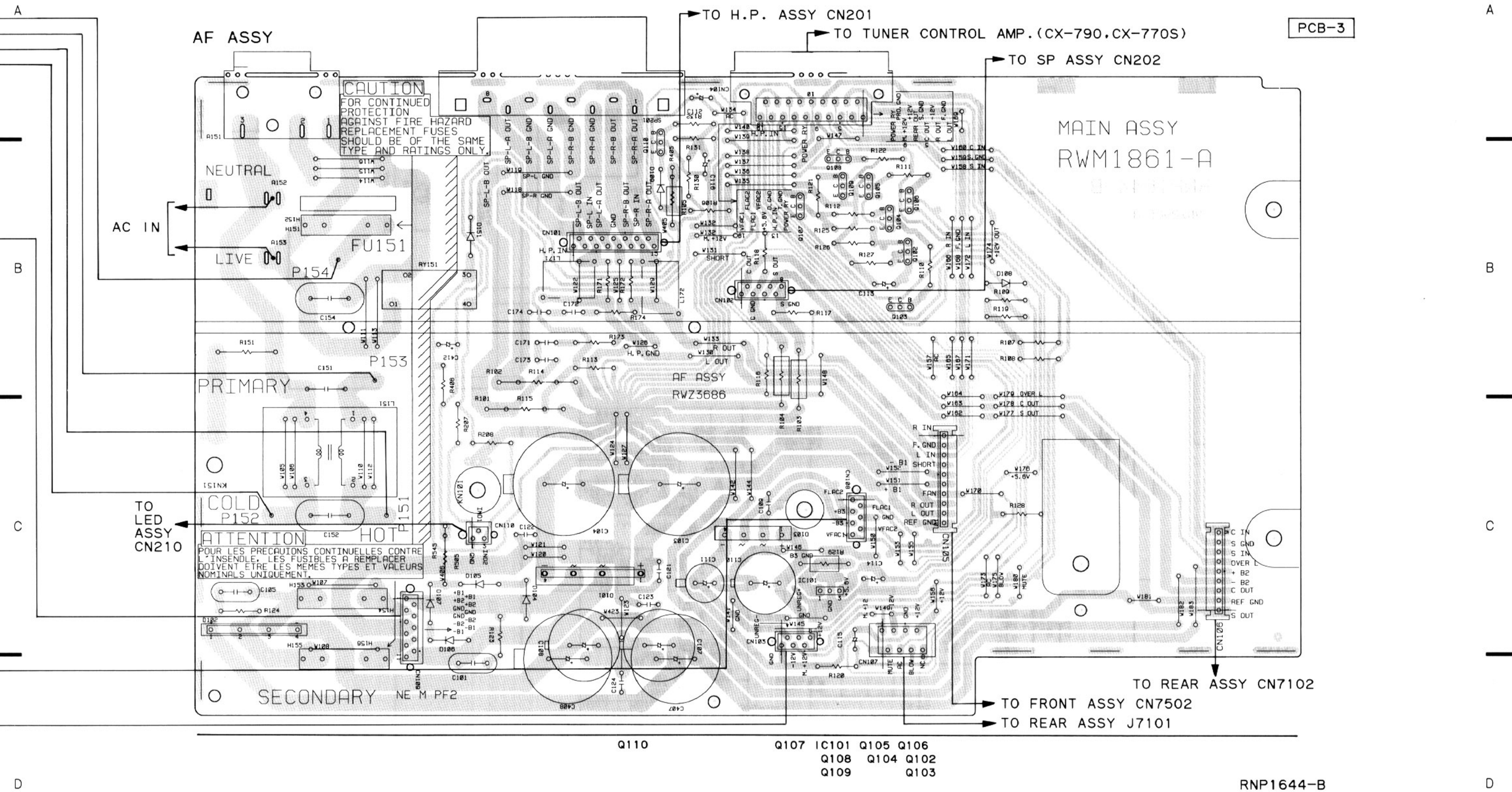
RNP1644-B

- This diagram is viewed from the mounted parts side.
- The parts mounted on this PCB include all necessary parts for several destinations. For further information for respective destinations, be sure to check with the schematic diagram.



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- This diagram is viewed from the mounted parts side.
- The parts mounted on this PCB include all necessary parts for several destinations.
  For further information for respective destinations, be sure to check with the schematic diagram.

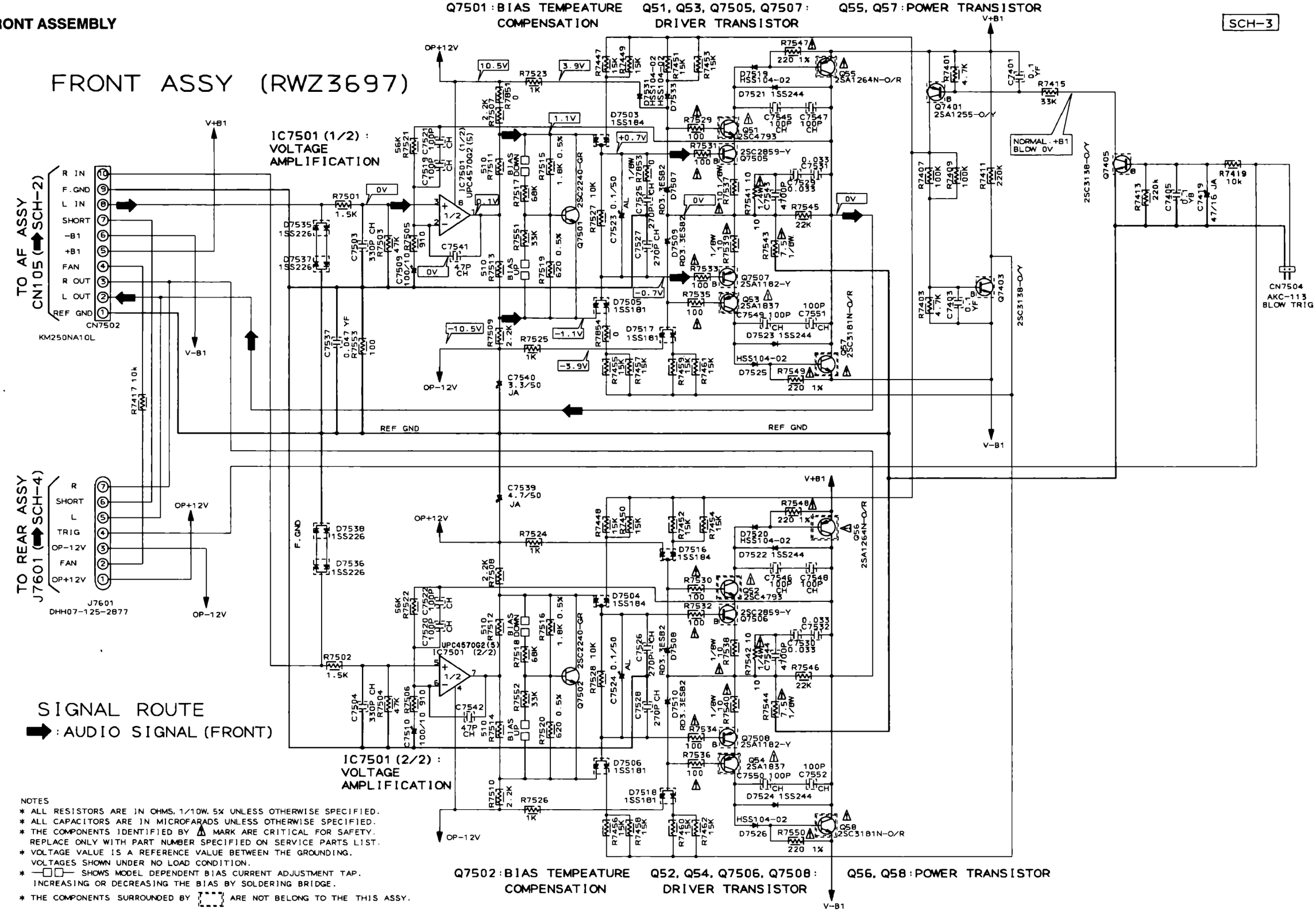
FRONT ASSY (RWZ3697)

Q7501 : BIAS TEMPEATURE COMPENSATION

Q51, Q53, Q7505, Q7507 : DRIVER TRANSISTOR

Q55, Q57 : POWER TRANSISTOR

SCH-3



NOTES

* ALL RESISTORS ARE IN OHMS, 1/10W, 5% UNLESS OTHERWISE SPECIFIED.
* ALL CAPACITORS ARE IN MICROFARADS UNLESS OTHERWISE SPECIFIED.
* THE COMPONENTS IDENTIFIED BY ⚠ MARK ARE CRITICAL FOR SAFETY. REPLACE ONLY WITH PART NUMBER SPECIFIED ON SERVICE PARTS LIST.
* VOLTAGE VALUE IS A REFERENCE VALUE BETWEEN THE GROUNDING. VOLTAGES SHOWN UNDER NO LOAD CONDITION.
* —□□— SHOWS MODEL DEPENDENT BIAS CURRENT ADJUSTMENT TAP. INCREASING OR DECREASING THE BIAS BY SOLDERING BRIDGE.
* THE COMPONENTS SURROUNDED BY [ ] ARE NOT BELONG TO THE THIS ASSY.

Q7502 : BIAS TEMPEATURE COMPENSATION

Q52, Q54, Q7506, Q7508 : DRIVER TRANSISTOR

Q56, Q58 : POWER TRANSISTOR

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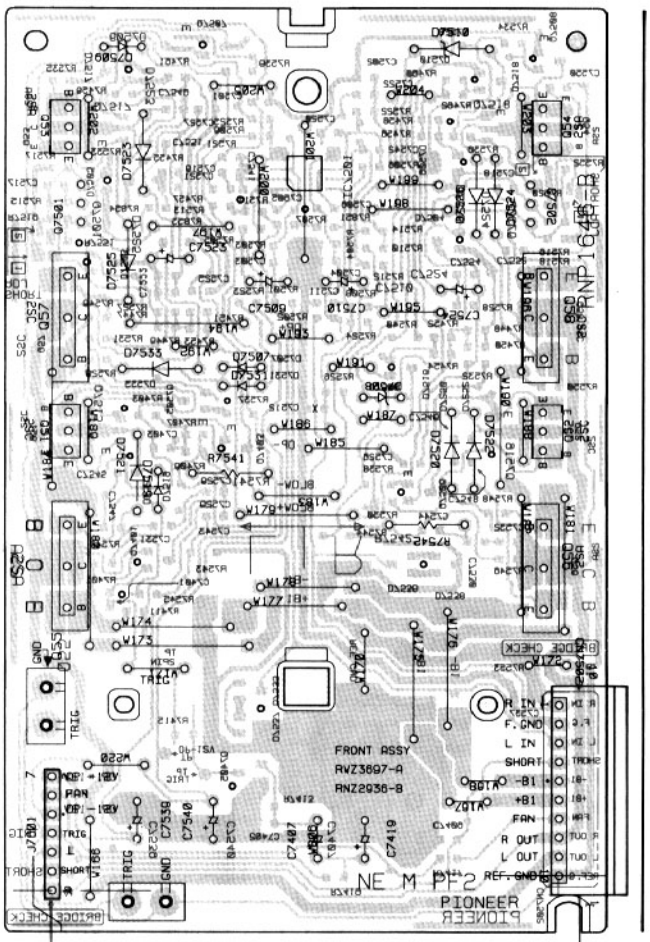
FRONT ASSY SCH-3

PCB-4

FRONT ASSY



TO REAR ASSY J7601

TO AF ASSY CN105

RNP1646-B

- This diagram is viewed from the mounted parts side.
- The parts mounted on this PCB include all necessary parts for several destinations.
  For further information for respective destinations, be sure to check with the schematic diagram.

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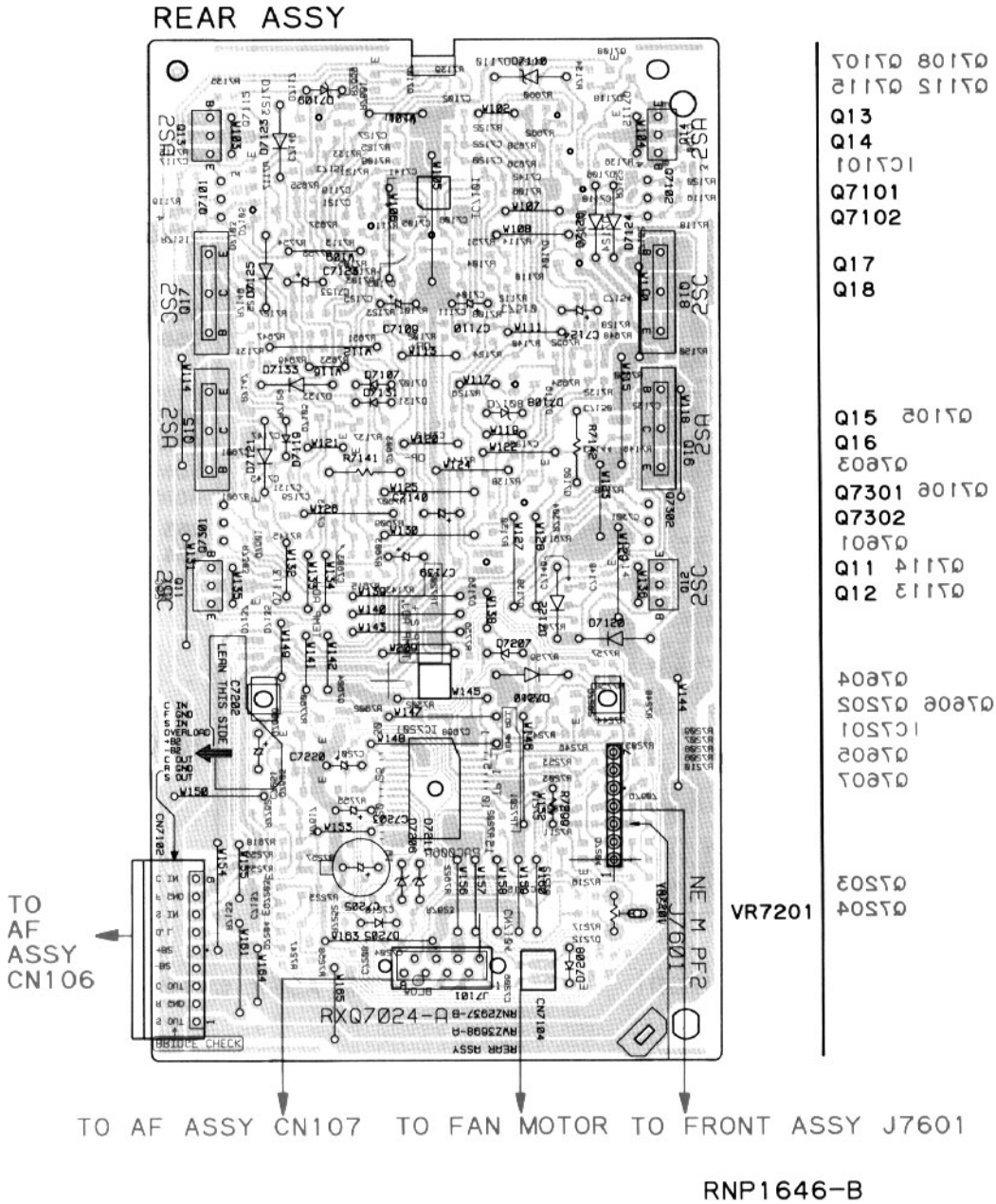
3.4 REAR ASSEMBLY

PCB-5



- This diagram is viewed from the mounted parts side.
- The parts mounted on this PCB include all necessary parts for several destinations.
  For further information for respective destinations, be sure to check with the schematic diagram.

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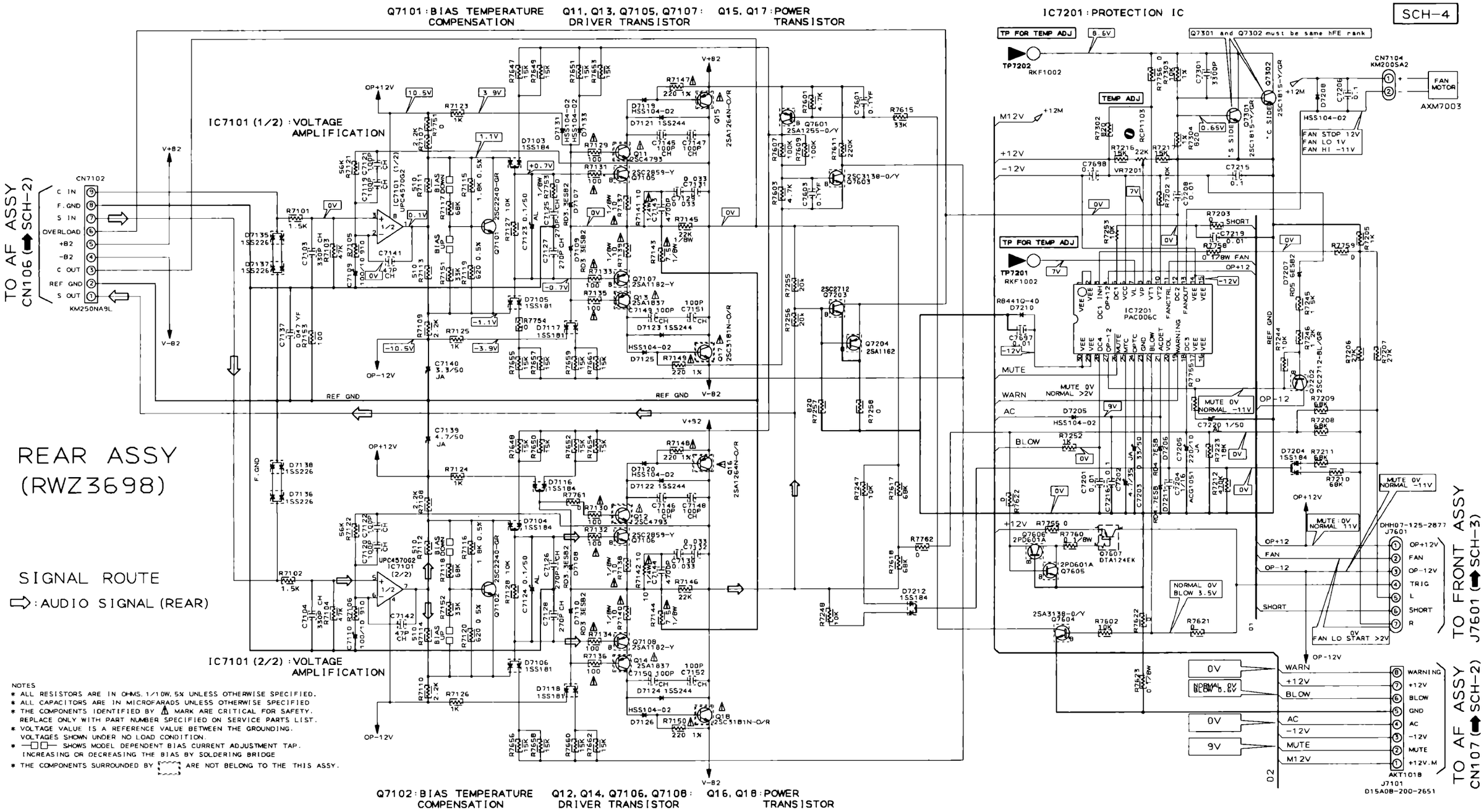
REAR ASSY (RWZ3698)

SIGNAL ROUTE

⇨ : AUDIO SIGNAL (REAR)



NOTES
* ALL RESISTORS ARE IN OHMS, 1/10W, 5% UNLESS OTHERWISE SPECIFIED.
* ALL CAPACITORS ARE IN MICROFARADS UNLESS OTHERWISE SPECIFIED
* THE COMPONENTS IDENTIFIED BY ⚠ MARK ARE CRITICAL FOR SAFETY. REPLACE ONLY WITH PART NUMBER SPECIFIED ON SERVICE PARTS LIST.
* VOLTAGE VALUE IS A REFERENCE VALUE BETWEEN THE GROUNDING. VOLTAGES SHOWN UNDER NO LOAD CONDITION.
* —□□— SHOWS MODEL DEPENDENT BIAS CURRENT ADJUSTMENT TAP. INCREASING OR DECREASING THE BIAS BY SOLDERING BRIDGE
* THE COMPONENTS SURROUNDED BY [ ] ARE NOT BELONG TO THE THIS ASSY.

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4. PCB PARTS LIST

NOTES:

- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω	→	*56 × 10¹*	→ *561*	*RD1/4PU561J*
47kΩ	→	*47 × 10³*	→ *473*	*RD1/4PU473J*
0.5Ω	→	*0R5*	.....	*RN2H0R5K*
1Ω	→	*1R0*	.....	*RS1P1R0K*

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	→	*562 × 10¹*	→ *5621*	*RN1/4PC5621F*

Mark	No.	Description	Parts No.
LIST OF ASSEMBLIES			
NSP	MAIN ASSY		RWM1861
	├ AF ASSY		RWZ3686
	├ REGURATOR ASSY		RWZ3687
	├ H.P. ASSY		RWZ3688
	├ LED ASSY		RWZ3689
	├ SP ASSY		RWZ3690
	├ POWER SW ASSY		RWZ3691
	├ SECONDARY ASSY		RWZ3692
	└ PRIMARY ASSY		RWZ3772
	POWER AMP. UNIT		RXQ7024
	├ FRONT ASSY		RWZ3697
	└ REAR ASSY		RWZ3698
MAIN ASSY			
OTHERS			
	Y154	BOARDIN READ WIRE	RDX1014
	Y153	BOARDIN READ WIRE	RDX1015
AF ASSY			
SEMICONDUCTORS			
⚠	IC101		NJM78M56FA
	Q102, Q105		2SA1048
	Q103, Q108		2SA1515
	Q104, Q109		2SC2458
	Q106		2SC3377
	Q107		DTA124ES
⚠	D103		D2SBA20(B)
⚠	D102		D3SBA20(B)
⚠	D101		D5SB20F
	D104 – D107, D151		HSS104 – 02
	D108		MTZJ7.5B
RELAY			
⚠	RY151		ASR1027

Mark	No.	Description	Parts No.
CAPACITORS			
⚠	C152, C154	(0.01μF/AC400V)	ACG1054
	C103, C104	(4700pF/DC63V)	ACH1249
	C115		CEANP470M25
	C114		CEAS010M50
	C112		CEAS100M50
	C111		CEAS102M35
	C110		CEAS222M35
	C113		CEAS331M6R3
	C171 – C174		CFTXA104J50
	C109		CQMA103K250
⚠	C101, C105		CQMA473K250
	C107, C108	(3300pF/DC50V)	RCH1129
RESISTORS			
⚠	R151	(2.2MΩ, 1/2W)	ACN – 208
	R173, R174		RD1/4PMF7R5J
⚠	R123, R124		RFA1/4PS100J
	R105		RS1LMF182J
	R129		RS1LMF470J
	R103, R104		RS2LMFR22J
	R101, R102		RS3LMFR22J
		Other Resistors	RD1/4PU□□□J
OTHERS			
		SPEAKER TERMINAL 8 – P	AKE – 111
⚠		AC OUTLET 3P	AKP1053
		SOCKET(19P)	AKP7001
		CABLE HOLDER	AKT1007
	CN105	10P SOCKET	KP250NA10
	CN106	9P SOCKET	KP250NA9
	CN107	CONNECTOR(8P)	KPE8
		PCB BINDER	VEF1040
	KN101, KN151	EARTH METAL FITTING	VNF1084
REGURATOR ASSY			
SEMICONDUCTORS			
⚠	IC301, IC302		NJM7812FAS
⚠	IC303		NJM79M12FA

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Mark	No.	Description	Parts No.
CAPACITORS			
	C305		CEAS010M50
	C301 – C303, C306		CEAS100M50
RESISTOR			
	R301		RS1LMF2R2J
H.P. ASSY			
SWITCH			
	S201	PUSH SWITCH	SULLXS
CAPACITOR			
	C201		CKCYF473Z50
RESISTORS			
	R201 – R204		RS2LMF681J
OTHERS			
		JACK	AKN1025
LED ASSY			
SEMICONDUCTORS			
	D201 – D206		AEL1065
SP ASSY			
CAPACITORS			
	C202 – C205		CQMA104J50
RESISTORS			
	R209, R210		RD1/4PMF7R5J
OTHERS			
		SPEAKER TERMINAL 4 – P	AKE1012
		SPEAKER TERMINAL 2 – P	AKE1032
POWER SW ASSY			
SWITCH			
⚠	S151	PUSH SWITCH	ASG – 553
CAPACITOR			
⚠	C153	(0.01μF/AC400V)	ACG1054
SECONDARY ASSY			
SEMICONDUCTORS			
⚠	IC151 – IC154		ICP – N50
OTHERS			
		CABLE HOLDER	AKT1007
PRIMARY ASSY			
OTHERS			
	Y152	BOARDIN READ WIRE	ADX7039
	Y151	BOARDIN READ WIRE	ADX7043
FRONT ASSY			
SEMICONDUCTORS			
	IC7501		UPC4570G2(5)
	Q7507, Q7508		2SA1182
	Q7401		2SA1255
	Q7501, Q7502		2SC2240
	Q7505, Q7506		2SC2859

Mark	No.	Description	Parts No.
	Q7403, Q7405		2SC3138
	D7505, D7506, D7517, D7518		1SS181
	D7503, D7504, D7516		1SS184
	D7535 – D7538		1SS226
	D7521 – D7524		1SS244
	D7519, D7520, D7525, D7526, D7531		HSS104 – 02
	D7533		HSS104 – 02
	D7507 – D7510		RD3.3ESB2
CAPACITORS			
	C7519 – C7522, C7545 – C7552		CCSQCH101J50
	C7525 – C7528		CCSQCH271J50
	C7503, C7504		CCSQCH331J50
	C7541, C7542		CCSQCH470J50
	C7523, C7524		CEALR10M50
	C7509, C7510		CEAS101M10
	C7540		CEJA3R3M50
	C7419		CEJA470M16
	C7539		CEJA4R7M50
	C7405		CKSQYB104K25
	C7529 – C7532		CKSQYB333K50
	C7543, C7544		CKSQYB472K50
	C7401, C7403		CKSQYF104Z50
	C7537		CKSQYF473Z50
RESISTORS			
	R7515, R7516	(1.8kΩ, 1/10W)	ACN1107
⚠	R7541, R7542		RD1/4PMF100J
	R7519, R7520		RN1/10SE621D
⚠	R7529 – R7536		RS1/10S101J
⚠	R7547 – R7550		RS1/10S2200F
	R7853		RS1/8S000J
⚠	R7537 – R7540		RS1/8S100J
	R7553		RS1/8S101J
⚠	R7543, R7544		RS1/8S7R5J
		Other Resistors	RS1/10S□□□J
OTHERS			
	CN7502	10P PLUG	KM250NA10L
REAR ASSY			
SEMICONDUCTORS			
	IC7201		PAC006C
	IC7101		UPC4570G2
	Q7605, Q7606		2PD601A
	Q7204		2SA1162
	Q7107, Q7108		2SA1182
	Q7601		2SA1255
	Q7301, Q7302		2SC1815
	Q7101, Q7102		2SC2240
	Q7202, Q7203		2SC2712
	Q7105, Q7106		2SC2859
	Q7603, Q7604		2SC3138
	Q7607		DTA124EK
	D7105, D7106, D7117, D7118		1SS181
	D7103, D7104, D7116, D7204, D7212		1SS184
	D7135 – D7138		1SS226

Mark	No.	Description	Parts No.
	D7121 – D7124		1SS244
	D7119, D7120, D7125, D7126, D7131		HSS104 – 02
	D7133, D7205, D7208		HSS104 – 02
	D7210		RB441Q – 40
	D7107 – D7110		RD3.3ESB2
	D7206, D7211		RD4.7ESB
	D7207		RD5.6ESB2
CAPACITORS			
	C7204	(1μF/DC16V)	ACG1051
	C7119 – C7122, C7145 – C7152		CCSQCH101J50
	C7125 – C7128		CCSQCH271J50
	C7103, C7104		CCSQCH331J50
	C7141, C7142		CCSQCH470J50
	C7220		CEAL010M50
	C7123, C7124		CEALR10M50
	C7202		CEANL4R7M50
	C7109, C7110		CEAS101M10
	C7205		CEJA221M10
	C7140		CEJA3R3M50
	C7139		CEJA4R7M50
	C7203		CEJAR33M50
	C7201, C7208, C7219, C7697		CKSQYB103K50
	C7301		CKSQYB332K50
	C7129 – C7132		CKSQYB333K50
	C7143, C7144		CKSQYB472K50
	C7206, C7215, C7216, C7601, C7603		CKSQYF104Z50
	C7698		CKSQYF104Z50
	C7137		CKSQYF473Z50
RESISTORS			
	R7115, R7116	(1.8kΩ, 1/10W)	ACN1107
⚠	R7141, R7142		RD1/4PMF100J
	R7119, R7120		RN1/10SE621D
⚠	R7129 – R7136		RS1/10S101J
⚠	R7147 – R7150		RS1/10S2200F
	R7623, R7753, R7759, R7760		RS1/8S000J
⚠	R7137 – R7140		RS1/8S100J
	R7153		RS1/8S101J
	R7145		RS1/8S223J
⚠	R7143, R7144		RS1/8S7R5J
	VR7201	(22kΩ, 0.1W)	RCP1103
		Other Resistors	RS1/10S□□□J
OTHERS			
	CN7102	9P PLUG	KM250NA9L
		PCB BINDER	VEF1040

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5. ADJUSTMENTS

POWER AMP. UNIT SECTION (Refer to Fig. 1.)

5.1 Handling Precautions

- Since the heat sink and transistor metallic parts are connected to the Front Amp output, make sure they do not contact the GND (chassis) or other circuits.
- Since there is residual high voltage in the Power Amp Module Assy ±B1 (FRONT ASSY) and ±B2 (REAR ASSY) even when the power is OFF, caution should be exercised. (If necessary, the voltage should be discharged).
- When handling the Power Amp. UNIT, make sure you do not touch the fan motor blade.

5.2 Adjustment and Confirmation of Idle Current

- Basically, the idle current needs to be confirmed when replacing a power transistor, driver transistor, or bias transistor, or when the entire split board Assy of the Power Amp. UNIT has been replaced.
- Make sure the heat sink has cooled sufficiently before measuring the idle current. (Temperature should be the same as room temperature; 25°C is ideal, if possible.)
- Idle current stipulated value: 3 – 50mA.

CAUTION :
Before performing this adjustment, short the blow trigger shorting pin (shown in Fig. 2) of the FRONT ASSY to prevent the protection IC from malfunction. After adjustment is completed, remove the short-circuit.

■ Front Amp Side (FRONT ASSY)

Step	Measurement	Item	Remarks
1	Lch side	Short both sides of C7123 and C7124 on the Rear Amp side.	Do not operate the Rear Amp side.
2		Insert a resistor (0.22Ω, 3W or more) in series in the connector CN7502 +B1 (or –B1) line (terminal No.5 or 6). (Refer to Fig.3)	For measuring voltage at both sides of resistor.
3		Short both sides of C7524.	Do not operate Rch side.
4		Turn the power ON, wait 6 seconds, and then measure the resistance voltage in Step 2.	Lch Idle current I=V/0.22 (Ω)
5	Rch side	• Same as Steps 1 and 2 above. • Short both sides of C7523.	Do not operate Lch side.
6		Turn the power ON under the above conditions, and after 6 seconds measure the resistance voltage in Step 2.	
7	—	If the measured idle current is greater than 50mA, perform the following procedure.	
8	Lch side	Short between the Point Ⓐ pattern in Fig.4 using solder.	Connect R7517 to R7515 in a parallel circuit.
9	Rch side	Short between the Point Ⓑ pattern in Fig.4 using solder.	Connect R7518 to R7516 in a parallel circuit.
10	—	After performing Steps 8 and 9, remeasure the idle current and confirm that it is below 50mA.	
11	—	If the idle current is below 3mA, perform the following procedure.	
12	Lch side	Short between the Point Ⓒ pattern in Fig.4 using solder.	Connect R7551 to R7519 in a parallel circuit.
13	Rch side	Short between the Point Ⓓ pattern in Fig.4 using solder.	Connect R7552 to R7520 in a parallel circuit.
14	—	After performing Steps 12 and 13, remeasure the idle current and confirm that it is greater than 3mA (within 3 – 50mA).	

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■ **Rear Amp Side (REAR ASSY)**

Step	Measurement	Item	Remarks
1	Center amp side	Short both sides of C7523 and C7524 on the Front Amp side.	Do not operate the Front Amp side.
2		Insert a resistor (0.22Ω, 3W or more) in series in the connector CN7102 +B2 (or −B2) line (terminal No.4 or 5). (Refer to Fig.5)	For measuring voltage at both sides of resistor.
3		Short both sides of C7124 on the Surround Amp side.	Do not operate the Surround Amp.
4		Turn the power ON, wait 6 seconds, and then measure the resistance voltage in Step 2.	Idle current : I=V/0.22 (Ω)
5	Surround amp side	● Same as Steps 1 and 2 above. ● Short both sides of C7123 on Surround Amp side.	Do not operate the Surround Amp.
6		Turn the power ON under the conditions in Steps 1 and 2, and after 6 seconds measure the resistance voltage in Step 2.	
7	——	If the measured idle current is greater than 50mA, perform the following procedure.	
8	Center amp side	Short between the Point Ⓔ pattern in Fig.6 using solder.	Connect R7117 to R7115 in a parallel circuit.
9	Surround amp side	Short between the Point Ⓕ pattern in Fig.6 using solder.	Connect R7118 to R7116 in a parallel circuit.
10	——	After performing Steps 8 and 9, remeasure the idle current and confirm that it is below 50mA.	
11	——	If the idle current is below 3mA, perform the following procedure.	
12	Center amp side	Short between the Point Ⓖ pattern in Fig.6 using solder.	Connect R7151 to R7119 in a parallel circuit.
13	Surround amp side	Short between the Point Ⓗ pattern in Fig.6 using solder.	Connect R7152 to R7120 in a parallel circuit.
14	——	After performing Steps 12 and 13, remeasure the idle current and confirm that it is greater than 3mA (within 3 – 50mA).	

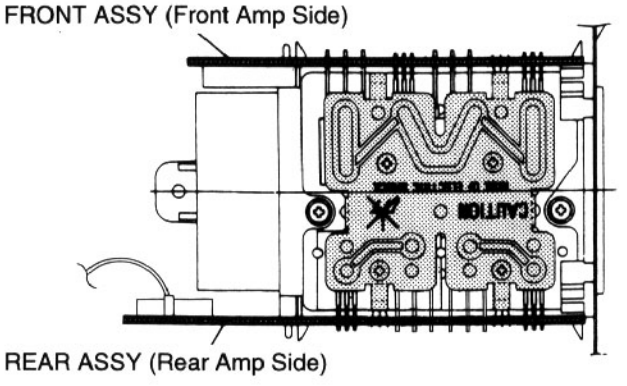

Fig. 1 POWER AMP. UNIT(RXQ7024)

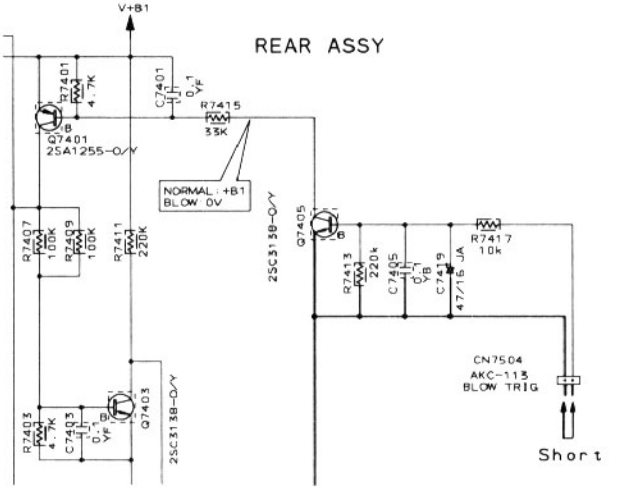

Fig. 2 BLOW TRIGGER CIRCUIT

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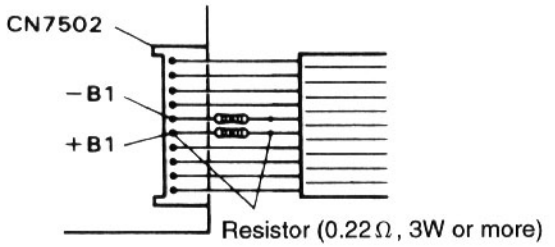


Fig. 3 FRONT ASSY

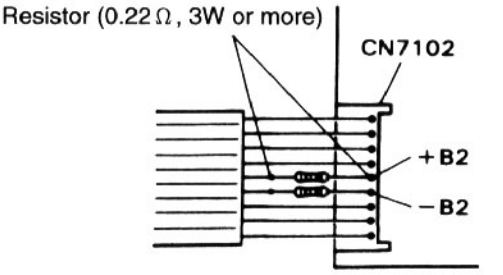
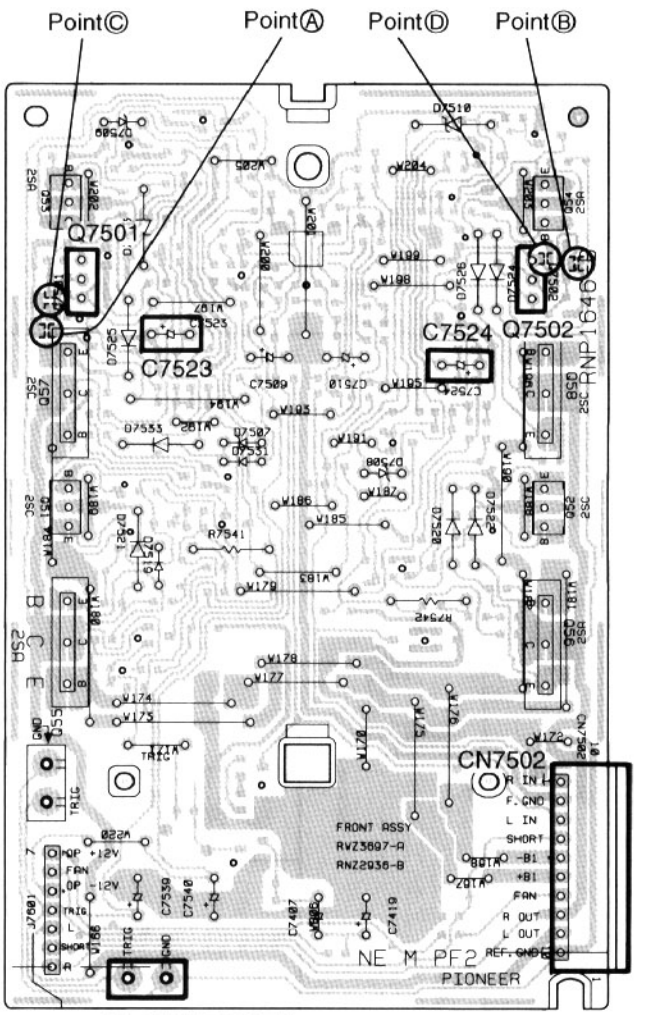


Fig. 5 REAR ASSY



BLOW TRIGGER
SHORT PIN

Fig. 4 FRONT ASSY

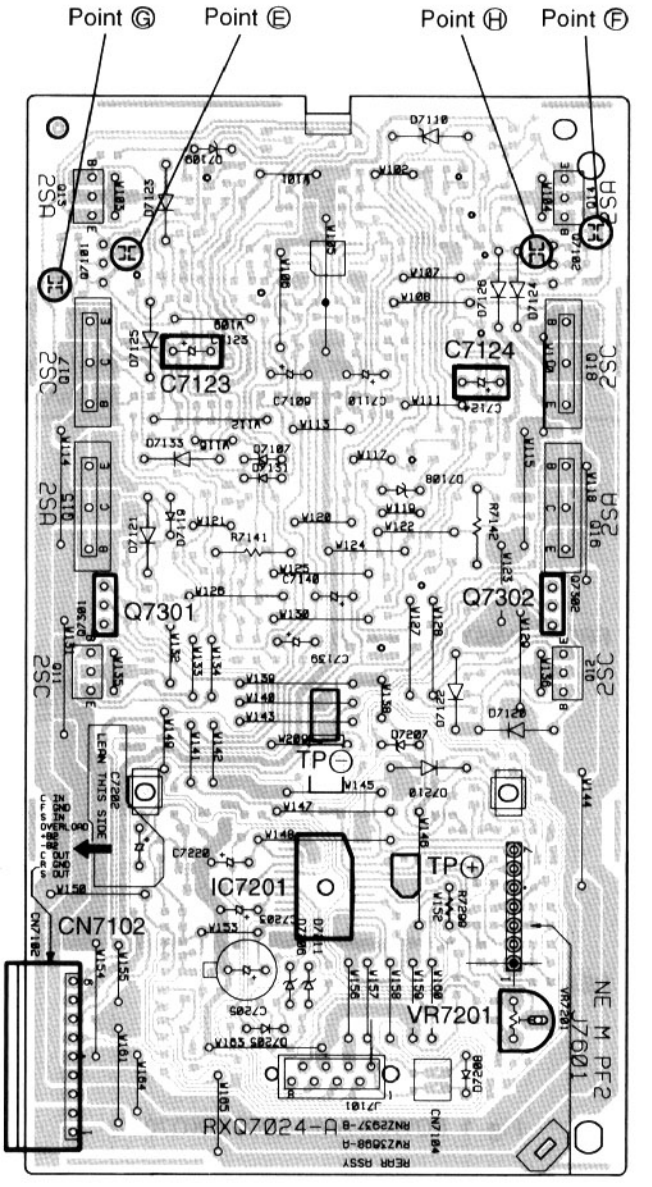


Fig. 6 REAR ASSY

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5.3 Adjusting the Operating Temperature Setting of the Fan Motor (VR7201)

This adjustment is necessary when IC301 (+12V regulator), Q7301 and Q7302 (temperature sensors), or VR7201 has been replaced, or when the entire split board Assy of the Power Amp. UNIT has been replaced.

CAUTION :
Before performing this adjustment, short the blow trigger shorting pin (shown in Fig. 2) of the FRONT ASSY to prevent the protection IC from malfunction. After adjustment is completed, remove the short-circuit.

■ Adjustment-Related Cautions

- Make sure the heat sink has sufficiently cooled (is the same as room temperature Ta.)
- Once the power has been turned ON, make measurements and adjustments as quickly as possible. (If too much time is taken, the heat sink temperature will rise, and the measurements will deviate from the Ta measurement point.)

■ Adjustment

1. Connect a voltmeter between TEMP and TP (or between IC7201 terminals No.7 and 9). (Refer to Figs.6 and 7.)
2. Determine the fan motor operating temperature setting by means of the following formula. (Tolerance is within ±30mV.)
   Formula : (75°C – Ta) × 19 (mV)
   Ta : ambient temperature (°C)
3. Adjust VR7201 so that the voltage between TEMP and TP is the value obtaind from the above formula.
   For example :
   when the room temperature is 25°C,
   set value = (75 – 25) × 19 (mV)
   = 950mV (tolerance within ±30mV).

Note :
Adjustment during service should be ±30mV, but if this value cannot be obtained with the measuring instruments used for adjustment, ±50mV is acceptable.

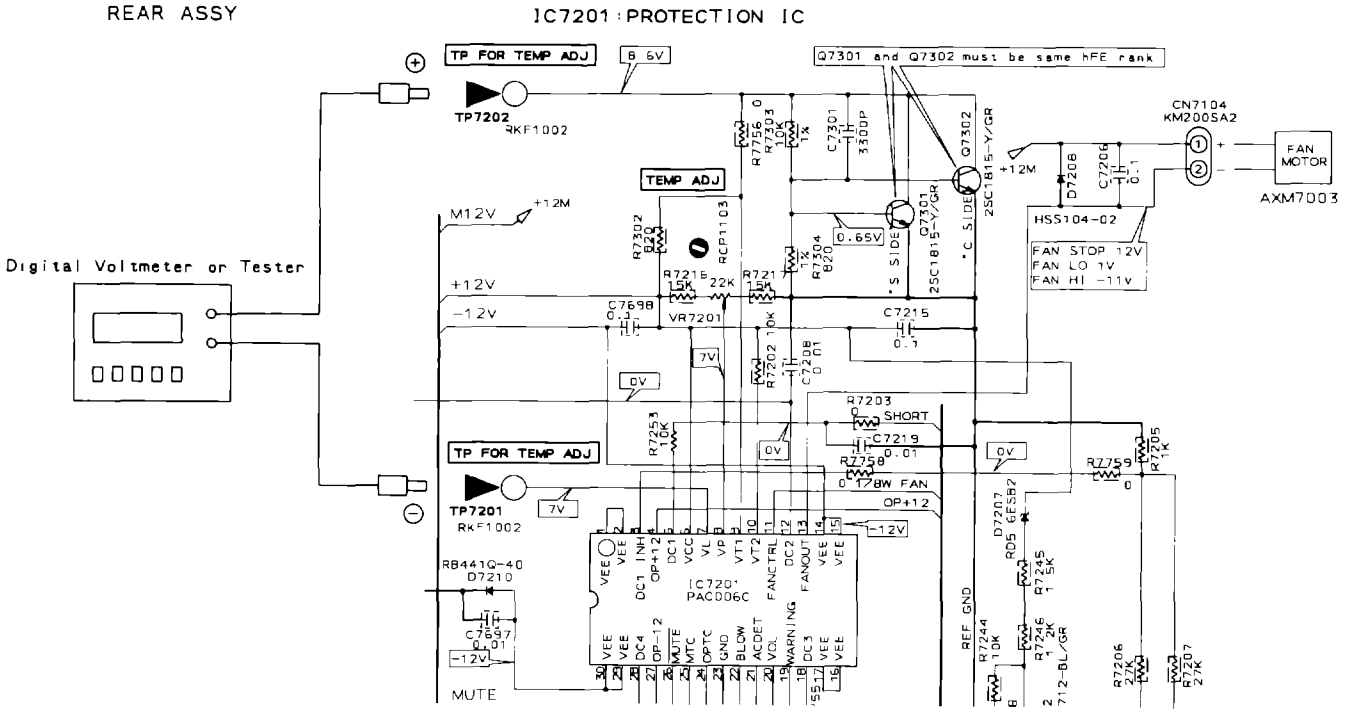

Fig. 7 Adjustment of Operating Temperature Setting of Fan Motor

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6. HOW TO CHECK M-790

As M-790 is controlled from CX-790 or CX-770S, please carry out check in combination with CX-790 or CX-770S.

● How to Check M-790 only.

When checking of the operation of only M-790 is required, the operation can be easily checked according the following procedures.

1. Connect pin 14 (D.GND) and pin 11 (POWER RY) of the CN104 (external connection connector) on AF ASSY (RWZ3686).
2. When pressing the power switch of M-790, the set will enter normal operation status. After this, you can carry out check of the operation.

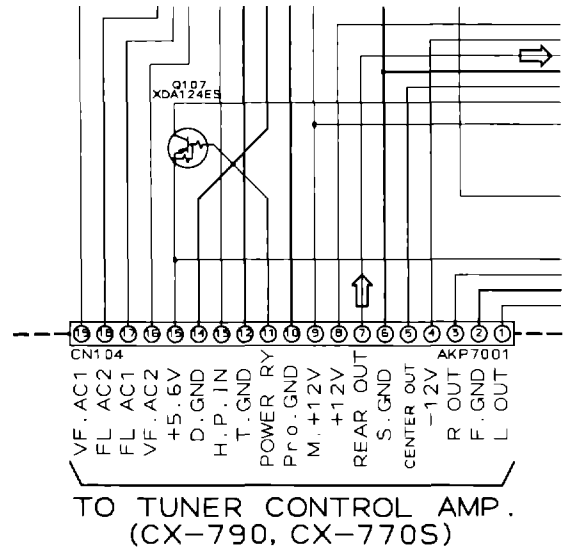

Fig. 8

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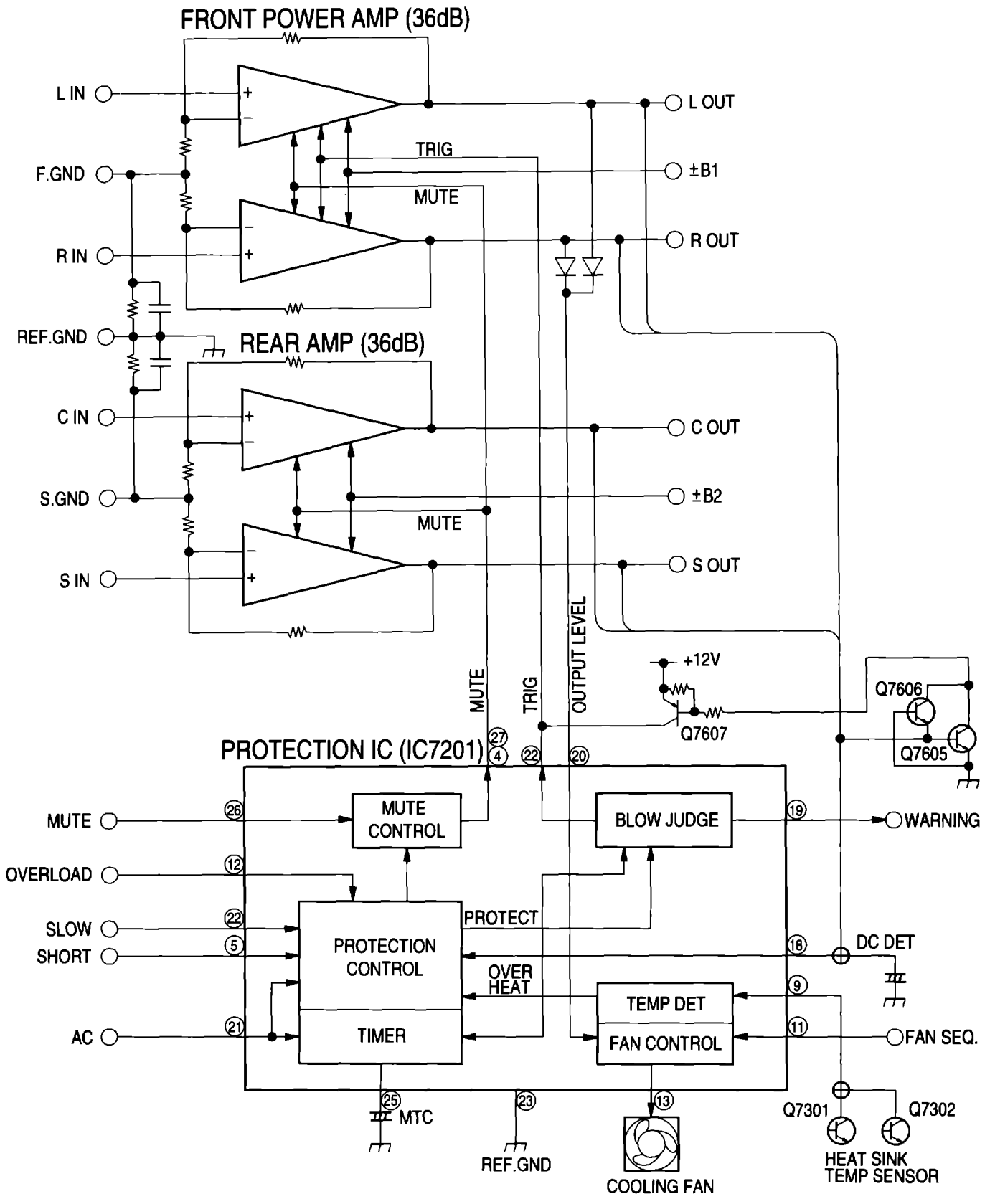
7. BLOCK DIAGRAM

● **POWER AMP. UNIT SECTION**



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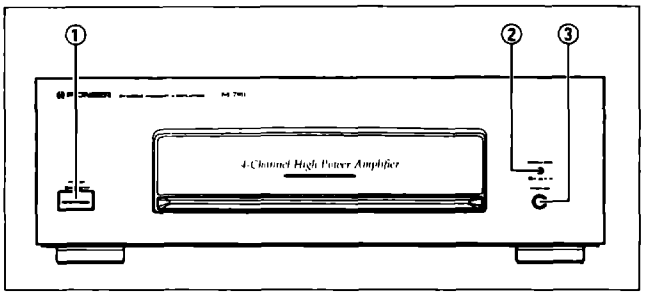
8. PANEL FACILITIES



① POWER (OFF/ON) switch

When this switch is OFF, the tuner control amplifier's POWER switch does not function. When this switch is ON, the STANDBY indicator of the tuner control amplifier lights.

② SPEAKERS button (▮ A, ▬ A+B)

This is used to select the speaker through which you wish to listen.

▮ A : When the speakers connected to A terminals are in use.

▬ A+B : When the speakers connected to A and B terminals are in use.
(There is no sound at this position when speakers are connected only to the A terminals.)

Be sure to use A terminals when you are using one pair of speakers only. No sound will be heard through the speakers when only one pair of speakers are connected to B terminals.

③ PHONES jack

This is a "standard plug-type jack" for headphones.

NOTE:

Sound is not heard from the speakers when headphones are in use.

9. SPECIFICATIONS

[Front], [Center], [Rear]

Continuous Power Output

Stereo (Front Channels) ..... Continuous Average Power Output is 100 Watts* per channel, min., at 8 ohms from 70 Hertz to 20,000 Hertz, with no more than 0.9 %** total harmonic distortion.

4-Channel

Front Channels ..... 70 W + 70 W (8 Ω , 1 kHz, 0.2 % THD)

Center Channel ..... 70 W (8 Ω , 1 kHz, 1 % THD)

Rear Channels ..... 70 W (8 Ω , 1 kHz, 1 % THD)

* *Measured pursuant to the Federal Trade Commission's Trade Regulation rules on Power Output Claims for Amplifiers.*

** *Measured By Audio Spectrum Analyzer.*

Miscellaneous

Power Requirements ..... AC 120 V, 60 Hz

Power Consumption

M-790 ..... 300 W, 400 VA

AC Outlets

Switched x 1 ..... 100 W (0.8 A) MAX

Unswitched x 2 ..... 200 W (1.6 A) MAX

Dimensions

M-790 ..... 420 (W) x 140 (H) x 336 (D) mm
16-9/16 (W) x 5-1/2 (H) x 13-1/4 (D) in

Weight (without package)

M-790 ..... 7.8 kg (17 lb 3 oz)

NOTE:

- *Specifications and design are subject to possible modifications without notice due to improvements.*

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